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UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

In Cooperation With

UNITED STATES DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT

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SOIL SURVEY of the MARIPOSA AREA - NORTHERN PART

(Public lands under jurisdiction of
the Bureau of Land Management and
the adjacent private lands.)

Field Work by - Charles Beutler, SCS, Mariposa, California

Report by - Richard Bierking, SCS, Fresno, California and
Charles Beutler, SCS, Mariposa, California

4831 East Shields Avenue
Fresno, California

February 7, 1964

Mr. H. Curt Hammit
District Manager
Bureau of Land Management
Sacramento District Office
650 Capitol Mall
Sacramento, California

Dear Mr. Hammit;

I am pleased to transmit herewith three copies of a report of the soil survey of the Mariposa Area, Northern Part, in fulfillment of an agreement between the Soil Conservation Service and Bureau of Land Management, dated October 3, 1962 (C.11-C). Included in the report are maps showing a medium intensity survey and data concerning the survey.

I am sure you are aware that the information in this interim report is of a preliminary nature, especially the names of the soils, pending final soil correlation and the publication of the Soil Survey of the Mariposa Area, California. The Mariposa Area will be published as one of our regular numbered soil survey series publications.

Specific questions concerning information in the report should be directed to Messrs. Richard Dierking, Soil Specialist, Soil Conservation Service, Fresno, California or Charles Beutler, Soil Surveyor, Soil Conservation Service, Mariposa, California.

We appreciate your continued cooperation and interest.

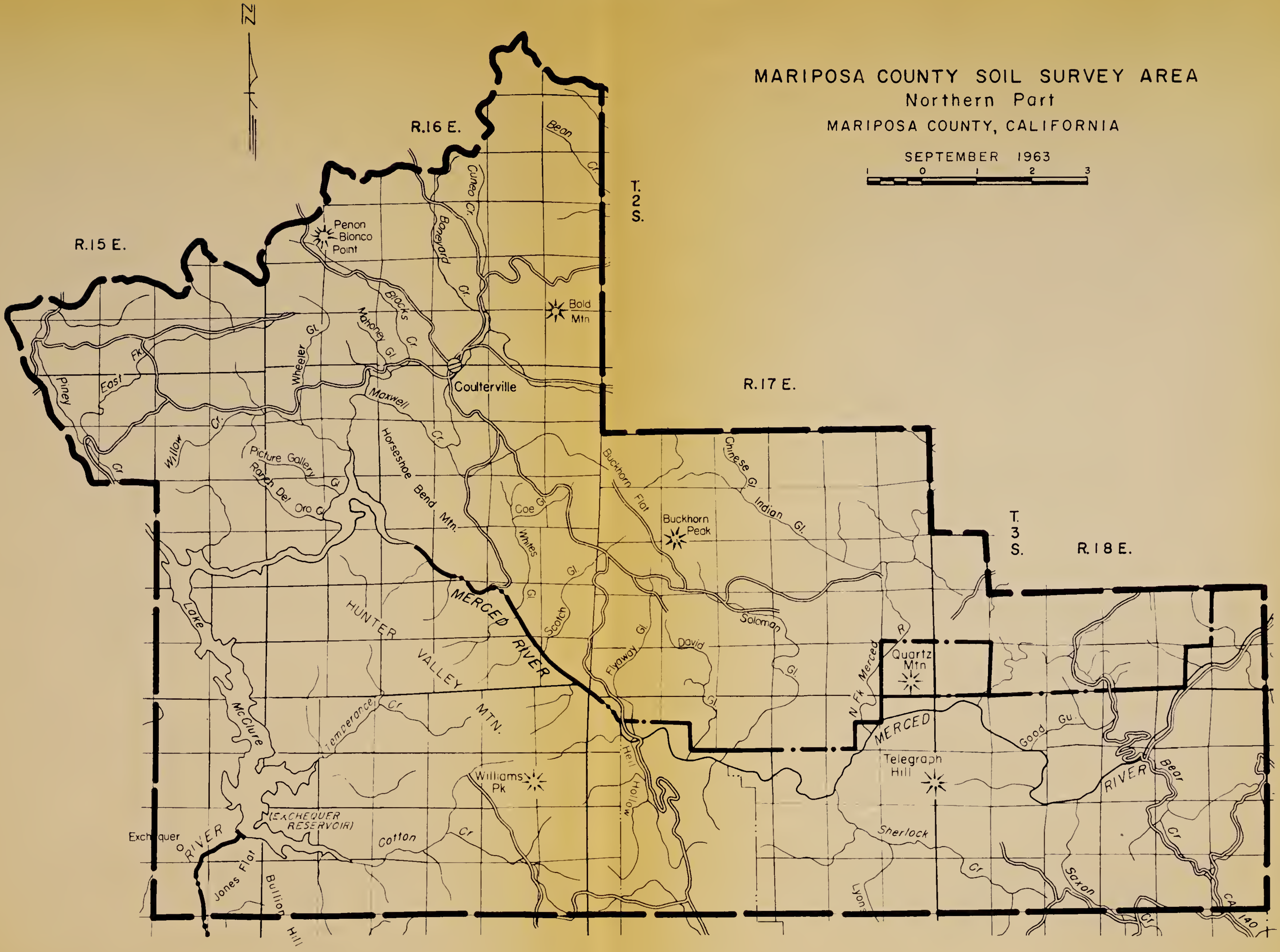
Sincerely yours,

George Gibbs

George K. Gibbs
Area Conservationist

cc: John Barnes, SCS, Berkeley w/report and maps
Carl Rice, BLM, Sacramento w/maps (1 copy of report sent previously)

MAP OF AREA


N
R.15 E.
R.16 E.
R.17 E.
R.18 E.
T. 2 S.
T. 3 S.
T. 4 S.
1 0 1 2 3
Penon Bionco Point
Bald Mtn
Coulterville
Bean Cr
Cuneo Cr
Boneyard Cr
Blacks Cr
Mahoney Gl
Wheeler Gl
Maxwell Cr
Piney
East Fk
Willow Cr
Cr
Picture Gallery Gl
Rancho Del Oro Gl
Horseshoe Bend Mtn.
Coe Gl
Whites Gl
Scotch Gl
Buckhorn Flat
Chinese Gl
Indian Gl
Buckhorn Peak
Solomon Gl
David Gl
Flyaway Gl
N. Fk Merced R
Quartz Mtn
MERCED RIVER
HUNTER VALLEY MTN.
Lake McClure
Temperance Cr
Williams Pk
Hell Hollow
MERCED
Telegraph Hill
Good Gu
RIVER
Bear Cr
Sherlock Cr
Lyons
Saxon Cr
CA 140
Exchequer
RIVER
(EXCHEQUER RESERVOIR)
Cotton Cr
Jones Flat
Bullion Hill

MARIPOSA COUNTY SOIL SURVEY AREA

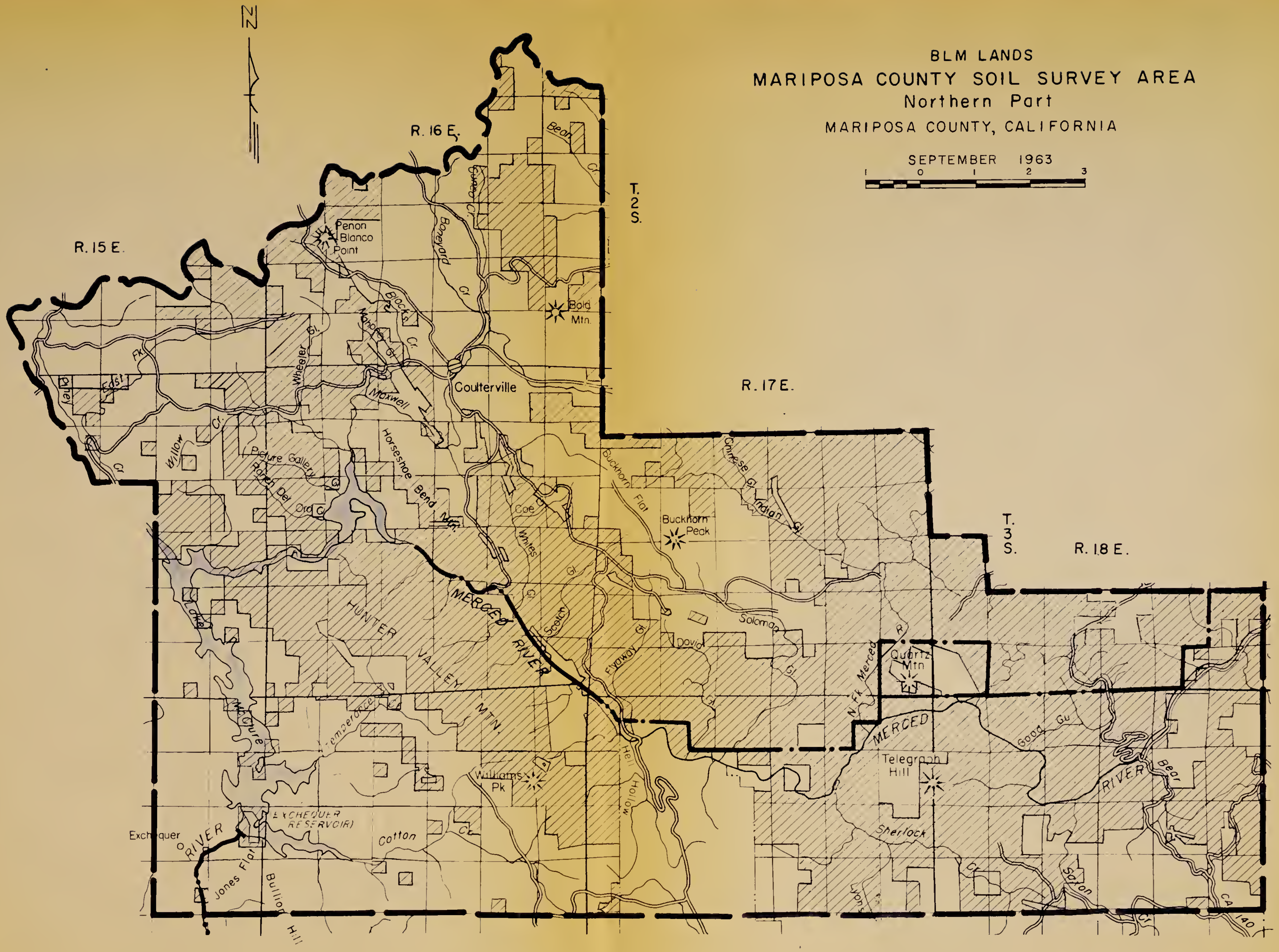
Northern Part

MARIPOSA COUNTY, CALIFORNIA

SEPTEMBER 1963

BLM LANDS
MARIPOSA COUNTY SOIL SURVEY AREA
Northern Part
MARIPOSA COUNTY, CALIFORNIA

SEPTEMBER 1963



1 0 1 2 3
R. 15 E.
R. 16 E.
R. 17 E.
R. 18 E.
T. 2 S.
T. 3 S.
T. 4 S.
Penon Blanco Point
Bald Mtn.
Coulterville
Buckhorn Peak
Quartz Mtn
Telegraph Hill
Williams Pk
Exchequer
EXCHEQUER RESERVOIR
MERCED RIVER
N. Fk. Merced R.
MERCED RIVER
RIVER
HUNTER VALLEY MTN
Horseshoe Bend Mtn.
Lake McClure
Bean Cr.
Boneyard Cr.
Blacks Cr.
Maxwell Cr.
Wheeler Gl.
Willow Cr.
East Fk.
Piney Cr.
Picture Gallery Gl.
Rancho Del Oro Gl.
Buckhorn Flat
Chinese Gl.
Indian Gl.
Coe Gl.
Whites Gl.
Scotch Gl.
Fryaway Gl.
David Gl.
Solomon Gl.
Good Gu.
Bear
Hell Hollow
Temperance Cr.
Cotton Cr.
Jones Flat
Bullion Hill
Sherlock Cr.
Saxon Cr.
CA 140

IDENTIFICATION LEGEND

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE, CALIFORNIA
Mariposa, California
September 10, 1953

Mariposa Soil Survey Area (Northern Part)
Identification Legend

Mapping Unit Symbol	Soil Identification
[illegible]/AB-1	Loamy Alluvial, 2-9% slopes.
[illegible]-1	"
[illegible]/A-1	[illegible] loam, 1 5% slopes
[illegible]-2	"
[illegible]/B-1	"
[illegible]-21/AC-1	Musick loam, 2 9% slopes.
[illegible]-21/C-1	Musick loam, 2-16% slopes.
[illegible]/BE-1	Loamy Alluvial, [illegible] slopes.
[illegible]-70/B-1	Josephine loam, deep, 2-9% slopes.
[illegible]-70/C-1	Josephine loam, deep, 2-16% slopes.
[illegible]-70/E-1	Josephine loam, deep, 16-31% slopes.
[illegible]-70/E-1	"
[illegible]	Trabuco-[illegible] loams, 2-16% slopes.
[illegible]/BC-1	[illegible] loam, moderately deep, 2-16% slopes.
[illegible]/E-1	Auburn loam, moderately deep, 31-[illegible] slopes.
[illegible]-62/BE-1	Aiken stony loam, deep, 16-31% slopes.
[illegible]	"
[illegible]	"
[illegible]	Sites loam, 31-50% slopes.

[illegible]

[illegible]	[illegible]
[illegible]	[illegible] rocky sandy loam, [illegible]
[illegible]-12/[illegible]-1	Aiken stony loam, deep, 16-51% slopes.
[illegible]	"
[illegible]	"
[illegible]/1G-2	Auburn extremely rocky loam, 5-75% slopes.
[illegible]-70/BD-1	Josephine loam, 2-16% slopes.
[illegible]-70/E-1	Josephine loam, 16-31% slopes.
[illegible]-70/F-1	Josephine loam, 31-51% slopes.
[illegible]-72/BD-1	Dorado loam, moderately deep, 2-16% slopes.
[illegible]-72/F-1	Dorado rocky loam, moderately deep, 16-51% slopes.
[illegible]-72/F-1	Dorado rocky loam, moderately deep, 16-51% slopes.
[illegible]	[illegible] gravelly silt loam, 16-51% slopes.
[illegible]-33/BD-1	Trabuco - Fallbrook loams, 2-16% slopes.
[illegible]-40/[illegible]-1	Auburn loam, moderately deep, 2-16% slopes.
[illegible]-40/E-1	Auburn loam, moderately deep, 16-31% slopes.
[illegible]-40/F-1	Auburn loam, moderately deep, 31-51% slopes.
[illegible]	Aiken stony loam, 16-51% slopes.
[illegible]	"
[illegible]	Argonaut loam, [illegible] slopes.

[illegible]
[illegible]
[illegible]
[illegible]

[illegible] Soil Survey Area [illegible]
Identification Legend

Mapping Unit Symbols	Name (Tentative)
[illegible]	[illegible] loam, [illegible] slopes.
[illegible]	[illegible] loam, [illegible] slopes.
[illegible]	[illegible] rocky sandy loams, [illegible] slopes.
[illegible]	[illegible] rocky sandy loams, [illegible] slopes.
[illegible]	[illegible] rocky sandy loams, [illegible] slopes.
[illegible]	[illegible] rocky loam, [illegible] slopes.
[illegible]	[illegible] rocky loam, [illegible] slopes.
[illegible]	[illegible] rocky loam, moderately deep, [illegible] slopes.
[illegible]	[illegible] rocky loam, [illegible] slopes.
[illegible]	[illegible] - [illegible] loams, [illegible] slopes.
[illegible]	[illegible] - [illegible] rocky loams, [illegible] slopes.
[illegible]	[illegible] rocky loam, moderately eroded, [illegible]
[illegible]	[illegible] rocky loam, moderately deep, [illegible]
[illegible]	[illegible] rocky loam, moderately deep, [illegible]
[illegible]	[illegible] rocky loam, moderately deep, [illegible]
[illegible]	[illegible] rocky loam, [illegible] slopes.
[illegible]	[illegible] stony loam, moderately deep, [illegible]
[illegible]	[illegible] stony loam, [illegible] slopes
[illegible]	[illegible] stony loam, severely eroded, [illegible]
[illegible]	[illegible] stony loam, [illegible] slopes.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE, [illegible]
[illegible], CALIFORNIA
[illegible]

Mariposa Soil Survey Area (Northern Part)
Identification Legend

Mapping Unit Symbols	Name (Tentative)
[illegible]	Auburn extremely rocky loam, 5-[illegible]% slopes.
[illegible]	Whiterock rocky loam, 5-51% slopes.
[illegible]	Hornitos coarse sandy loam, 2-31% slopes.
[illegible]	Auburn loam, 2-15% slopes.
[illegible]	Auburn loam, 16-31% slopes.
[illegible]	Daulton loam, 16-31% slopes.
[illegible]	"
[illegible]	[illegible] loam, 2-16% slopes.
[illegible]	[illegible] rocky loam, 16-31% slopes.
[illegible]	Mariposa loam, 16-51% slopes.
[illegible]	"
[illegible]	[illegible] gravelly silt loam, 16-51% slopes.
[illegible]	Argonaut loam, shallow, 2-16% slopes.
[illegible]	Argonaut loam, shallow, 16-31% slopes.
[illegible]	Henneke stony loam, 2-75% slopes.
[illegible]	Auburn rocky loam, 16-31% slopes.
[illegible]	Auburn rocky loam, 31-75% slopes.
[illegible]	Daulton loam, 16-31% slopes.
[illegible]	Daulton rocky loam, 31-75% slopes.
[illegible]	[illegible] rocky loam, 16-31% slopes

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE, CALIFORNIA
MARIPOSA, CALIFORNIA
September 10, 1963

Mariposa Soil Survey Area (Northern Part)
Identification Legend

Mapping Unit Symbols	Name (Tentative)
[illegible]-72/FG-1	Dorsum rocky loam, 31-75% slopes.
[illegible]-75/FG-1	Maymen rocky loam, 31-75% slopes.
[illegible]-76/F-1	Laughlin rocky loam, 16-31% slopes.
[illegible]-75/FG-1	Laughlin Rocky loam, 31-75% slopes.
[illegible]33-45/DE-1	Argonaut rocky loam, shallow, 9-31% slopes.
[illegible]33-45/F-1	Argonaut rocky loam, shallow, 31-51% slopes.
[illegible]-42/EF-3	Aiken stony loam, severely eroded, 31-75% slopes.
[illegible]33-40/F-2	Auburn stony loam, 31-51% slopes.
[illegible]-72/CF-1	Whiterock rocky loam, 5-51% slopes.
[illegible]-91/F[illegible]-1	Auburn soil material, 31-75% slopes.
[illegible]-92/G-1	Maymen soil material, 31-75% slopes.
[illegible]-92/H-2	Maymen soil material, over 75% slopes.
[illegible]	Mine dumps
[illegible]	Riverwash and mine tailings
[illegible]	Rockland
[illegible]	Riverwash and mine tailings

SOIL SURVEY MAPPING LEGEND
MARIPOSA COUNTY SOIL SURVEY AREA
MARIPOSA COUNTY MARCH 1962

The soil survey being made by the Soil Conservation Service in Western and Southern Mariposa County as outlined in the Work Plan is a standard soil survey whereby the mapping units are placed into a national system of soil classification. The boundaries of soil mapping units are delineated on aerial photographs of the survey area from carefully observed field conditions. The Identification Legend follows the National Soils used by the Soil Conservation Service. This procedure supplies much of the soils and environmental information needed in conservation planning. Detailed information will be supplied by the Descriptive Legend for all mapping units used.

Soil bodies are symbolized on the field sheets by means of a fractional symbol. The depth, texture modifiers, texture, and series are indicated in the numerator. In case of restrictive material to water and/or root penetration, this material and depth to it are also indicated. Slope, erosion, and if present wetness, flooding, alkali and/or salinity are shown in the denominator.

EFFECTIVE SOIL DEPTH symbols are arabic numbers and have the following basic meanings:

1 Over 60 inches deep to restrictive materials.
2 36" - 60 " " " " "
3 20" - 36 " " " " "
4 10" - 20 " " " " "
5 0" - 10 " " " " "

TEXTURE MODIFIERS are lower case letters and have the following basic meanings:

g Indicates 20 to 50 percent rounded, subrounded, subangular or angular (sometimes slaty) rock fragments two to 3 inches in diameter. [illegible] in soil surface and often includes a few stones and cobbles. Cobbles are fragments of rock 3 inches to 10 inches in diameter.

s Indicates all shapes of rock fragments over 10 inches in diameter and often includes some rock outcroppings over part of the area. Areas also may be a little gravelly or cobbly. Sufficient rock fragments are present in surface or subsurface horizons to make use of cultivating machinery impractical.

r Indicates rock outcropping or large stones which cover from about two to fifty percent of the surface area of the areas delineated. In slopes less than 31 percent on stable soils and less than 16 percent on erodible soils where applicable the "r" symbol will have from about three percent to slightly over ten percent rock

SOIL CONSERVATION SERVICE
MARIPOSA

Mariposa Soil Survey Area
(Northern Part)

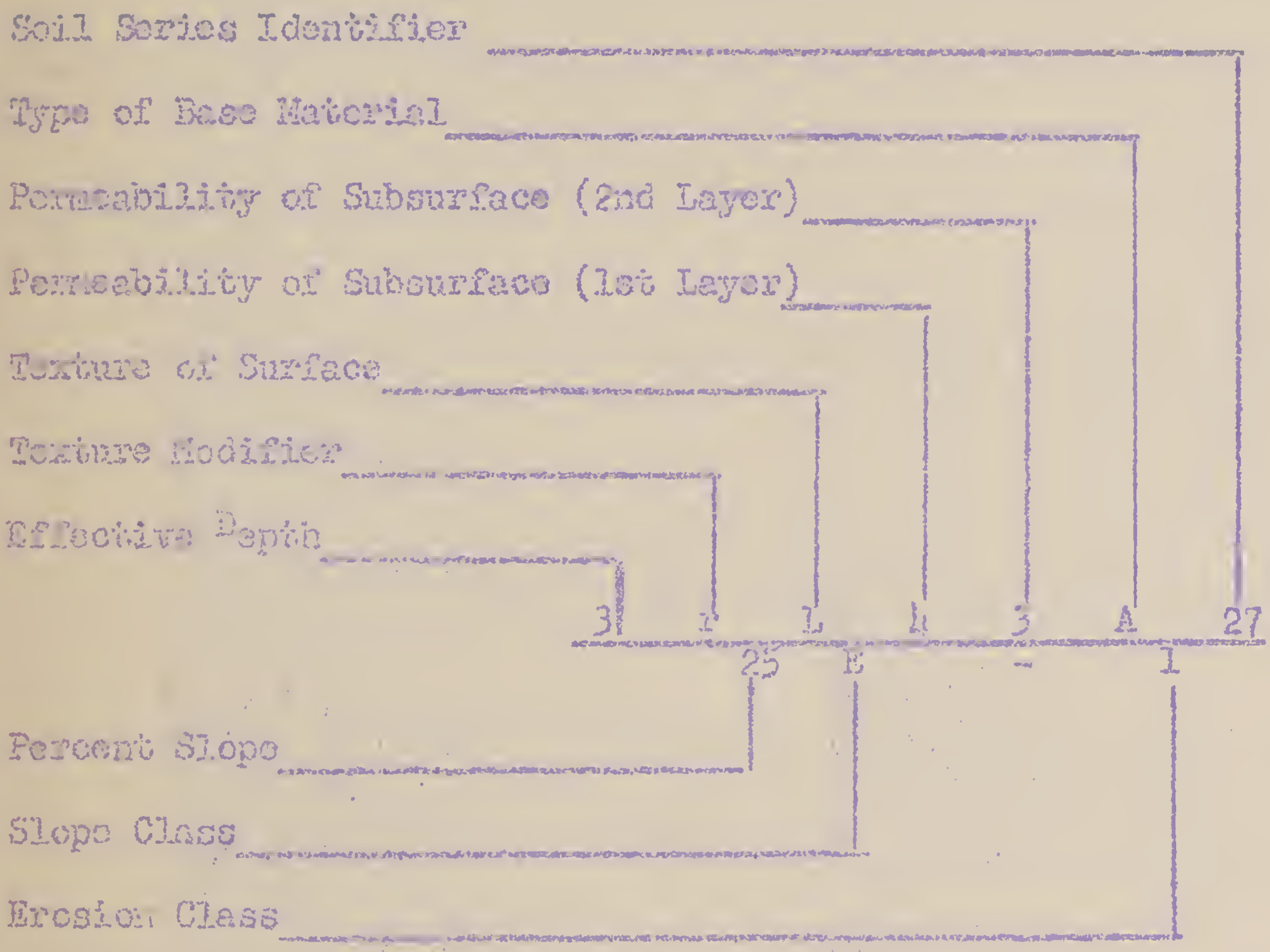

Soil Series Identifier
Type of Base Material
Permeability of Subsurface (2nd Layer)
Permeability of Subsurface (1st Layer)
Texture of Surface
Texture Modifier
Effective Depth
3 r L h 3 A 27
25 E - 1
Percent Slope
Slope Class
Erosion Class

Figure I

Arrangement of mapping unit for Auberry-Sierra rock sandy loams, 16-31% slopes.

outcropping and use of machinery though restricted still remains feasible for cultivation operations. If outcropping exceeds this figure the areas delineated will become a small inclusion to the appropriate mapping symbols for conservation planning.

ar Indicates extreme amount of rock outcrops varying from about 50 to 90 percent of the surface or surface layers being influenced by this amount of large stones or rock outcrops.

When rockiness exceeds 90 percent of the areas delineated it will be put into Miscellaneous type Rocklands (RL) symbol.

TEXTURAL CLASS GROUPINGS are indicated by upper case letters and are as follows:

V These are described as very fine or very heavy soils which consist mostly clay particles (over 60% of clay fraction sizes being less than 2 microns in diameter). By textures these are called clay or heavy clay.

H These are described as fine or heavy soils. There are fewer fines (clay particles less than 2 microns in diameter) than above. By textures they are called light clays, clay loams, or heavy clay loams.

M These are described as medium soils. Silts, sands, and clays are in such proportion to have formed light clay loams or light sandy loams, heavy loams, loams, light loams or very fine sandy loams in decreasing order of fineness in textures. Also included are silts and silt loams.

L These are described as moderately coarse, or light textured soils. They consist of fine sandy loams, sandy loams or heavy sandy loams.

C These are described as coarse to very coarse soils. They consist of loamy fine sands, loamy sands, fine sands, sands and coarse sands.

X These are undifferentiated textures but are mostly sandy loams to clay loams. Probable infiltration rates are slow for V, moderately slow for H, for M, moderately rapid for L and rapid to very rapid for C. Cover, use, structure or other factors may alter infiltration rates to be either a little more rapid or a little slower for each of the textures.

PERMEABILITY RATES are indicated by single digit arabic numbers from 2 to 5 but often 2 of the numbers are used which indicates a change of permeability rates within the profile, the first number indicating the upper soil layer(s).

If rate of permeability is uniform only one number is used. They are interpreted as follows:

2 This number indicates slow permeability rates (0.05 to 0.20 inches per hour). Probable textures are heavy clay loam, light clay, clay or heavy clay with the massive non-porous types being somewhat less permeable than angular blocky porous types of the same textures. Other probable structures are prismatic, or platy.

3 This number indicates moderately slow permeability rates (0.20 to 0.80 inch per hour). Probable textures are light clay loam, heavy clay loam, clay loam, light clay or sandy clay loams. Probable structures are prismatic, angular or subangular blocky, platy or massive.

4 This number indicates moderate permeability rates (0.80 to 2.50 inches per hour). Probable textures are light clay loam or light sandy clay loam, heavy loam, loams, silt loams, very fine sandy loams, or heavy sandy loams. Probable structures are angular or subangular blocky, prismatic, or porous massive.

5 This number indicates moderately rapid permeability rates (2.50 to 5.0 inches per hour). Probable textures are heavy sandy loams, fine sandy loams, sandy loams and possibly heavy loamy sands. Probable structures run from single grain to subangular blocky or porous massive.

6 This number indicates rapid and occasionally very rapid rates of permeability (rapid 5.0 to 10.0 inches per hour, very rapid over 10 inches per hour). Structure for the most part is single grain and textures are loamy sands, fine sands, and sands.

TYPES OF BASE MATERIALS - When the soil profile is underlain by a restrictive layer to roots and/or water which causes cover to be affected it is indicated by an upper case letter. Exceptions are residual soils formed in place on parent material in which case the parent material is identified. Very deep and permeable Alluvial soils do not have parent materials identified but do have identified any restrictive materials which inhibit root and/or water penetration in the upper 60 inches of the profile. Types of materials identified are as follows:

A Acid igneous rock materials consisting of granites, granodiorite, quartz monzonite, quartz diorite and other acid igneous granitic rocks. In some cases gabbros are included when dominant rocks are quartz diorites which may have high hornblende content. Included may be metamorphosed acid igneous rocks such as granite gneiss.

B Basic and metabasic rock materials consisting of amphibolites, "greenstone" diabases, diorites, some gabbros, and other basic or metabasic igneous rocks.

3 Ultra basic or extremely fine grained metamorphic rock materials consisting of mostly serpentine, but also soapstone, olivine, and some peridotite, and other very fine grained rocks highly metamorphosed in character.

4. Metamorphic sedimentary rocks consisting of slates, metashales, metabasic schists such as chlorite schist, and other metasedimentary fine grained rocks. Small areas may include fine sedimentary rocks such as shales.

5 Metamorphic coarse grained to medium grained sedimentary rocks consisting of metasandstones, quartz mica schists and mica or mica quartz schists and other similar rocks. Included also are some sedimentary rocks such as sandstone. The schists mentioned are an intergrade between metamorphic sedimentary and metamorphic acid igneous granitic rocks.

9 Hardpan. Consists of mostly iron silica cemented layers but some small areas may be lime cemented.

6 Semiconsolidated Alluvium consisting of very hard to extremely hard when dry soil materials slightly cemented to the point where root and water penetration are slow to very slow.

7 Claypan. Consists mostly of very fine clays but may be modified with gravels, cobbles and/or stones. Slowly to very slowly permeable to roots and water.

8 Consists mostly of gravels and cobbles with a few stones. Included will be some areas of coarse sands and some loamy gravels.

SLOPE AND SLOPE CLASSES - The average percentage of slopes will be specified for the most part to the nearest 5% in the over 16% groups and to the nearest individual percent in less than 16% slope groups. Slopes will be given in a number which indicates percent grade. The slope groups are defined by upper case letters and are interpreted as follows:

A consists of slopes from 0 - 2% grade. Flat or nearly level.

B consists of slopes from 2 - 5% grade. Gently sloping or gently undulating.

C consists of slopes from 5 - 9% grade. Sloping or undulating.

D consists of slopes from 9 to 16% grade. Strongly sloping or rolling.

E consists of slopes from 16 to 31% grade. Moderately steep or hilly.

F consists of slopes from 31 to 51% grade. Steep

G consists of slopes from 51 to 75% grade. Very steep.

H consists of slopes from over 75% grade. Extremely steep.

Some of these slopes may be used in combination such as BD slopes which would be from 2 to 16% grade.

EROSION is indicated by numbers 1, 2, or 3 and in rare cases, 0, where applicable. Meanings are as follows:

1 No or slight erosion. Less than 25% of upper (surface) layer removed by water or wind or by other means.

2 Moderate erosion. From 25% to 75% of surface layer has been removed by erosive elements.

3 Severe erosion. From 75% to 100% of surface layer and up to 25% of subsoil layer(s) have been removed by erosive elements.

0 Deposition and erosion. These are stream channel areas in which flooding has deposited or removed soil materials of undetermined amounts.

WETNESS CLASSES. Wetness of agronomic significance will be shown. This is not to be confused with permeability as a wet soil can have any degree of permeability. Neither is it to be confused with descriptive terminology used in series descriptions such as imperfectly drained which may indicate mottling of historic value. These are indicated by lower case letter w and numbers 1 or 2. Meanings follow:

w1 slightly wet lands. These are lands in which by their position may retain water long enough to slightly delay planting of crops or slightly limit crops choices.

w2 moderately wet lands. These lands are affected by a fluctuating water table or a moderately deep water table (water below 20 inches) which moderately affect choice of crops and may affect planting dates.

Some of these wet lands may be somewhat affected by flooding in periods of intense rainstorms.

MISCELLANEOUS LAND TYPES. In addition to mapping units described, some miscellaneous land types are separated and are as follows:

RL Undifferentiated rocklands. These areas consist of areas in which over about 90% of the land surface is rock and/or stone outcropping. A method of identifying most of these lands for type of rock can usually be gleaned from knowing parent materials of soils surrounding these areas. Exceptions will be quartz rock outcrops and outcrops which occur on geological boundaries both of which are relatively minor in extent.

RW Riverwash gravels, sands, loamy gravels, stones or cobbles. Includes some stream gravel pit or borrow areas. These areas are often subject to flooding during intense storms.

MT Mine or dredge tailings. These often occur with riverwash areas. They are areas in which miners have worked over in quest of rare minerals and in many cases have left nearly pure rock particles varying from gravel to stone size.

CARTOGRAPHIC SYMBOLS. References for cartographic symbols are:

State guide for Soil Survey Legends - page 33.

Soil Survey Manual page 120, plates 1,2,3,4,5,6 and 7.

Used are miscellaneous land use areas which are either identified with such notations as Town of Mariposa or simply upper case letter H. These areas are encased in a broken line.

Green lines separate match photo lines. When broken such green lines indicate edge of Soil Survey boundary.

Red lines or two closely spaced black lines represent roads. When solid these are paved roads. When broken these are unpaved or unimproved roads.

Rock outcroppings are indicated by black outer lines.

Badly eroded gullies are indicated by a wavy red line.

Streams are identified by blue lines. If intermittent or unclassified they are broken lines with three dots between (in blue). If perennially classified they are solid blue lines or line (in case of wide rivers or creeks they are two lines one on each bank).

Dams are identified by black line with perpendicular lines drawn to it on the downstream side. Its reservoir area is outlined in blue. If dam is washed out it shows two such lines with opening at point of break. Reservoir area is outlined in broken blue line.

Watering troughs, wet areas, windmills, springs, mines and other features are as indicated in references. All blue marks represent some source of water.

The following groups of numbers have been setup so that the legend can be controlled in mapping, but new series can be recognized and a number assigned as mapping requires.

SOIL SERIES NUMBER GROUPED BY PARENT MATERIALS

0 - 19	Soils developed from alluvium
100 - 119	
20 - 39	Residuals soils from Acid Igneous Rocks (Granitics) (Includes some mixed acid igneous and Basic igneous coarse grained rocks)
40 - 59	Residual soils from Basic and Metabasic Igneous Rocks.
60 - 69	Soils from course or medium grained Sedimentary or Metasedimentary Rocks. Includes some Intergrade metamorphic rocks to the met-acid igneous rock groups - quartz and/or mica schists.
70 - 79	Soils from finer grained Sedimentary and Metasedimentary Rocks than above.
80 - 84	Soils from Ultrabasic or Ultrafine Metamorphic Rocks.
85 - 99	Reserved for Miscellaneous soils types such as Alluvial fans and steep, very shallow rocky soils.

SOILS DEVELOPED IN ALLUVIUM:

0 - Sycamore*	9 - Baynor	18 - Tierra*	107 -
1 - Ferndale	10 - Redding	19 -	108 -
2 - Ritchie*	11 - Honcut**	100 -	109 -
3 - Chualar**	12 -	101 - Maxwell	110 -
4 -	12 - Madera	102 -	111 -
5 - Visalia**	14 - Corning	103 -	112 -
6 - Oakglen**	15 - Keyes	104 -	113 -
7 - Marguerite**	16 - Anderson**	105 -	114 -
8 - San Joaquin	17 - Yolo**	106 -	115 -

* Indicates very tentative
** Correlate to series 94 - Loamy Alluvials

SOILS DEVELOPED FROM RESIDIUM - Granitic or Acid Igneous Rock

20 - Holland-Ahwahnee
21 - Musick
22 -
23 - Fallbrook
24 -
25 -
26 - Ahwahnee
27 - Auberry-Sierra
28 - Santa Cruz *
29 -
30 -
31 - Hildreth
32 -
33 - Trabuco-Fallbrook
34 -
35 -
36 -
37 -
38 -
39 -

* Indicates very tentative
** Correlate to series 94 - Loamy Alluvials

SOILS DEVELOPED FROM RESIDIUM - Basic and Metabasic Igneous Rock

40 - Auburn
41 - [illegible]
42 - Aiken
43 -
44 -
45 -
46 - Argonaut
47 - Sherlock**
49 -
50 -
51 -
52 -
53 -
54 -
55 -
56 -
57 -
58 -
59 -

SOILS DEVELOPED FROM RESIDIUM - Coarse and Medium Grained Sedimentary and Metasedimentary Rock

60 - Hornitos
61 -
62 -
63 -
64 - Ben Hur
65 -

SOILS DEVELOPED FROM RESIDIUM - Fine Grained Sedimentary and Metasedimentary Rock

66 -
67 -
68 -
69 -
70 - Josephine-Hugo
71 - Paulton
72 - Dorado
73 - Whiterock
74 - Mariposa
75 - Maymen
76 - Laughton
77 - Bandarita
78 - Coarsegold
79 - Sites

SOILS DEVELOPED FROM RESIDUUM- Ultra Basic Igneous or Ultrafine Grained Metamorphic Rocks.

80 -
83 -

81 - Hennecke
84 -

82 -
85 -

MISCELLANEOUS SOIL GROUPS

86 -

87 -

88 -

89 -

90 - Very shallow soils on Acid Igneous Rock Materials (Undifferentiated)

91 - Very shallow soils on Basic or Metabasic Rock Materials (Undifferentiated)

92 Very shallow soils on Sedimentary and Metasedimentary Rock Materials (Undifferentiated)

93 -

94 - Loamy Alluvial Soils (Undifferentiated)

95 -

96 -

97 -

98 -

99 -

RW - Riverwash ans stream bottom gravel pits

MT - Mine Tailings or Dredgings

RL - Undifferentiated Rock Lands

AS THE MARIPOSA COUNTY SOIL SURVEY AREA PROGRESSES APPROPRIATE REVISIONS WILL BE MADE FROM TIME TO TIME UNTIL COMPLETION OF THE SURVEY.

SOIL CHARACTERISTICS

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TABLE OF SOIL CHARACTERISTICS AND QUALITIES

Roche Bosh - 2-3-70
FC-WP=AWC

SURVEY AREA or WORK UNIT Mariposa Soil Survey Area (Northern Part - BLM and Adjacent Private Lands)

Date September 1963 Prepared by C. Beutler & R. Dierking Sheet 1 of 8

Map Symbol	Soil Name	Cap. Unit	Position	Soil Profile (dry)			Natural Drainage	Subsoil Perm.	Runoff	Erosion Hazard	Effective Depth (inches)	A.W.C. (inches)	Fertility	Present Use
				Surface Layer	Subsoil	Substratum or Parent Material								
3sM43B-42/EF-1 3M43B-42/E-1 3M43B-42/F-1	AIKEN stony loam, 16-51% slopes	VIe8 D-22	Moderately steep and steep uplands	Stony Loam, reddish brown crumb, hard, slightly acid	Loam over clay loam to light clay, stony or cobbly, reddish brown to red, blocky, hard, stony on cobbly, slight to medium acid	Stony loam to stony clay loam	Somewhat exces-sively drained	Moderately slow over slow	Rapid	Moderate	20"-36"	2.3 to 3.4	Moderate	Forest and range
3sM43B-42/G-1	AIKEN stony loam, 51-75% slopes	VIIe8 D-22	**Very** steep uplands	Loam, stony, rocky and/or cobbly reddish brown, crumb, hard slightly acid	Loam over clay loam to light clay, stony or cobbly, reddish brown to red, blocky, hard, stony or cobbly, slight to medium acid	Loam to clay loam, stony and/or cobbly, reddish brown to red, massive, hard, slightly to medium acid	Exces-sively drained	"	"	High	"	"	"	"
2sM43B-42/EF-1 2M43B-42/BC,D, E-1 2sH32B-42/BC, DE-1	AIKEN stony loam, deep, 16-51% slopes	VIe1 D-22	Steep uplands	Loam, stony or cobbly Reddish brown, crumb, hard, slightly acid	Loam to clay loam occasionally clay, stony or cobbly, angular or subangular blocky hard, slight to medium acid	Clay loam or heavy loam red, massive, slight to medium acid, usually stony or cobbly.	Some-what exces-sively drained	"	Medium	Moderate	36"-60"	4 to 7.5	High	"
3sM43B-42/FG-3 4sH3B-42/EF-3	AIKEN stony loam, severely eroded, 31-75% slopes	VIIe8 D-22	Moderately steep and steep uplands	Stony loam, reddish brown, crumb, hard, slightly acid	Loam over dlay loam, reddish brown to hard, massive to angular or subangler, blocky, hard, slight to medium acid, stony or cobbly.	Loam to clay loam, stony and/or cobbly, reddish brown to red, massive, hard, slight to medium acid	Exces-sively drained	"	Rapid	High	20"-36"	2.3 to 3.4	"	"
3M43B-46/BD-1	ARGONAUT loam, 2-16% slopes	IIIe8 C-18	Gently sloping to strongly sloping uplands	Yellowish red, light clay loam, massive, slightly to medium acid, 1½" - 12" thick.	Yellowish red clay loam, blocky, slightly hard to hard, slightly acid, 4" to 10" thick; over reddish brown to yellowish red light clay to clay, very to extremely hard, slightly to medium acid.	Basic and meta-basic igneous rock " " "	Well drained	Moderately slow over slow	Medium	Slight	20"-36"	3 to 6	Moderate	Annual Range & Pasture
3M43B-46/E-1	ARGONAUT loam, 16-31% slopes	IVe8 C-18	Moderately, steep upland	"	"	"	Somewhat excessively drained	"	Rapid	Moderate	"	"	"	Annual Range
4M43B-46/BD-1	ARGONAUT loam, shallow, 2-16% slopes	IVe4 C-18	Gently to strongly sloping uplands	"	"	"	Well drained	"	Medium	"	10" to 20"	1.5 to 3.5	Low	Annual Range
4M43B-46/E-1	ARGONAUT loam, shallow, 16-31% slopes	VIe4 C-18	Moderately steep uplands	"	"	"	Somewhat excessively drained	"	Rapid	High	"	"	"	"

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SURVEY AREA or WORK UNIT Mariposa Soil Survey Area (Northern Part - BLM and Adjacent Private Lands)
Date September 1963
Prepared by C. Beutler and R. Dierking
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Map Symbol	Soil Name	Cap. Unit	Position	Soil Profile (dry)			Natural Drainage	Subsoil Perm.	Runoff	Erosion Hazard	Effective Depth (inches)	A.W.C. (inches)	Fertility	Present Use
				Surface Layer	Subsoil	Substratum or Parent Material								
3rM43B-46/EF-1	ARGONAUT rocky loam, 16-51% slopes	VIe8 C-18	Moderately steep and steep uplands	Yellowish red, light clay loam, massive, slightly to medium acid 1½" - 12" thick	Yellowish red clay loam, blocky, slightly hard to hard, slightly acid, 4" to 10" thick; over reddish brown to yellowish red, light clay, very to extremely hard, slightly to medium acid	Basic and meta-basic igneous rock	Excessively drained	Moderately slow over slow	Rapid	High	20" to 36"	3 to 6	Moderate	Annual Range
4rM43B-46/DE-1	ARGONAUT rocky loam, shallow, 9-31% slopes	VIe4 C-18	Strongly sloping to moderately steep uplands	"	"	"	Somewhat excessively drained	"	"	"	10" to 20"	1.5 to 3.5	Low	"
4rM43B-46/F-1	ARGONAUT rocky loam, shallow, 31-51% slopes	VIIe4 C-18	Steep uplands	"	"	"	Excessively drained	"	"	"	"	"	"	Annual Range & Watershed
3rL43A-27/BD-1	AUBERRY-SIERRA rocky sandy loams, 2-16% slopes	IVe8 C-18	Gently sloping to strongly sloping uplands	Auberry: light brownish gray to pale brown, sandy loam, massive, soft, harder with depth, slightly acid Sierra: Grayish brown, fine sandy loam, crumb over massive, soft to slightly hard, slightly acid	Auberry: Pale brown to brown, light clay loam, blocky, very to extremely hard, slightly acid. Sierra: Yellowish brown to brown, heavy loam over reddish brown, sandy clay loam, blocky, extremely hard, slightly acid	Soft to extremely hard decomposed to massive acid igneous rock.	Well drained	Moderate over Mod. slow	Medium	Moderate	20" to 36"	2.5 to 4.5	Moderate	Annual range & pasture
3rL43A-27/E-1	AUBERRY-SIERRA, rocky, sandy loams, 16-31% slopes	VIe1 C-18	Moderately steep upland	"	"	"	Somewhat excessively drained	"	Rapid	High	"	2 to 5	"	Annual range
3rL43A-27/FG-1	AUBERRY-SIERRA rocky, sandy loams, 31-75% slopes	VIIe1 C-18	Steep to very steep uplands	"	"	"	Excessively drained	"	"	"	"	"	"	Annual range & watershed
3erM43B-40/DG-2 4erM4B-40/CF-1	AUBURN extremely rocky loam, 5-75% slopes	VIIs7 C-18	Moderately sloping to very steep uplands	Reddish brown, heavy loam, blocky, hard, slightly acid, 7" to 15" thick	Reddish brown clay loam, blocky, hard, slightly acid, 10" to 20" thick	Basic or meta-basic igneous rocks	"	"	"	"	"	3 to 6	"	Watershed

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Prepared by C. Beutler and R. Dierking
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Map Symbol	Soil Name	Cap. Unit	Position	Soil Profile (dry)			Natural Drainage	Subsoil Perm.	Runoff	Erosion Hazard	Effective Depth (inches)	A.W.C. (inches)	Fertility	Present Use
				Surface Layer	Subsoil	Substratum or Parent Material								
4M4B-40/BD-1	AUBURN loam, 2-15% slopes	IVe4 C-18	Gently to strongly sloping uplands	Reddish brown, heavy loam, blocky, hard, slightly acid, 7" thick	Reddish brown clay loam, blocky, hard, slightly acid, 7" to 12" thick	Basic or meta-basic igneous rock	Somewhat exces-sively drained	Moderate	Medium	Moderate	10"-20"	1.5 to 3.5	Low	Annual range & pasture
4M4B-40/E-2	AUBURN loam, 16-31% slopes	IVe4 C-18	Moderately steep uplands	"	"	"	Exces-sively drained	"	Rapid	High	"	"	"	Annual range
3M43B-40/BD-1 2M43B-40/BC-1	AUBURN loam, mod. deep, 2-16% slopes	IIIe8 C-18	Gently sloping to moderately sloping uplands	Brown to reddish brown heavy loam, weak crumb or weak blocky, hard, slightly acid	Reddish brown light clay loam, blocky, very to extremely hard, slightly acid.	"	Well drained	"	"	Slight	20"-36"	3 to 6	Moderate	Annual range & pasture
3M43B-40/E-1	AUBURN loam, mod. deep, 16-31% slopes	IVe8 C-18	Moderately steep upland	Brown to reddish brown heavy loam, weak crumb or weak blocky, hard, slightly acid	Reddish brown light clay loam or clay loam, blocky, very to extremely hard, slightly acid	"	Somewhat Exces-sively drained	Moderate-ly slow	Medium	Moderate	20-36	3 to 6	"	Annual range
3M43B-40/F-1 2M43B-40/F-1	AUBURN loam, mod. deep, 31-51% slopes	VIe8 C-18	Steep upland	"	"	"	Exces-sively drained	"	Rapid	High	"	"	"	"
4rM4B-40/E-1	AUBURN rocky loam, 16-31% slopes	VIe4 C-18	Steep to very steep upland	Reddish brown rocky heavy loam, blocky, hard, slightly acid	Reddish brown clay loam, blocky, hard, slightly acid	"	"	"	"	"	10-20	1.5 to 3.5	Low	"
4rM4B-40/FG-1	AUBURN rocky loam, 31-57% slopes	VIIe4 C-18	"	"	"	"	"	"	"	"	"	"	"	"
3rM43B-40/BD-1	AUBURN rocky loam, mod. deep, 2-16% slopes	IVs7 C-18	Gently to strongly sloping upward	Brown to reddish brown, rocky, heavy loam, weak crumb or weakly blocky, hard, slightly acid	Reddish brown light clay loam or clay loam, blocky, very to extremely hard, slightly acid	"	Somewhat exces-sively drained	"	Medium	Slight	20-36	3 to 6	Moderate	Annual range & pasture
3rM43B-40/EF-1	AUBURN rocky loam, mod. deep 16-51% slopes	VIe8 C-18	Moderately steep to steep upland	"	"	"	"	"	Rapid	High	"	"	"	Annual range
3rM43B-40/G-1	AUBURN rocky loam, mod. deep, 51-75% slopes	VIIe8 C-18	Very steep upland	"	"	"	Exces-sively drained	"	"	"	"	"	"	Annual range & watershed
5rXB-91/FG-1	AUBURN soil material, 31-75% slopes	VIIs4 C-18	Steep to very steep upland	Generally reddish brown rocky loam, slightly acid	--	"	"	"	"	"	Less than 10	Less than 1.5	Low	"
3sM43B-40/DE-2	AUBURN stony loam, mod. deep, 9-31% slopes	VIe8 C-18	Strongly sloping to moderately steep upland	Brown to reddish brown stony loam, weak crumb to weak blocky, hard, slightly acid	Reddish brown light clay loam, blocky, very hard, slightly acid, may be stony	"	Somewhat exces-sively drained	"	Medium	Moderate	20-36	2.3 to 3.4	Moderate	Annual range

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SURVEY AREA or WORK UNIT Mariposa Soil Survey Area (Northern Part - BLM and Adjacent Private Lands) Date September 1963 Prepared by C. Beutler and R. Dierking Sheet 4 of 8

Map Symbol	Soil Name	Cap. Unit	Position	Soil Profile (dry)			Natural Drainage	Subsoil Perm.	Runoff	Erosion Hazard	Effective Depth (inches)	A.W.C. (inches)	Fertility	Present Use
				Surface Layer	Subsoil	Substratum or Parent Material								
4sM43B-40/F-2	AUBURN stony loam, 31 to 51% slopes	VIe4 C-18	Steep upland	Reddish brown stony heavy loam, blocky, hard, slightly acid	Reddish brown clay loam, blocky, hard, slightly acid	Basic or meta-basic igneous rocks	Excessively drained	Moderately slow	Rapid	High	10-20	1.1 to 2.6	Low	Annual range
3rM43A-33/FG-3	BANCAS rocky loam, severely eroded, 31-75% slopes	VIIe8 C-18	Steep to very steep upland	Brown to reddish brown loam, blocky, slightly hard to hard, slightly acid	Reddish brown to yellowish red clay loam or sandy clay loam, blocky, very hard, slightly acid	"	"	Moderately slow to slow	"	"	20-36	3 to 6	"	Annual range & watershed
4M4YE-77/EF-1 3M4YE-77/EF-1	BANDARITA gravelly silt loam, 16-51% slopes	VIe4 D-22	Moderately steep to steep upland	Pale brown to greyish brown gravelly silt loam, blocky, slightly hard, medium to strongly acid	Reddish brown to yellowish red clay loam to silty clay, blocky, very hard, Very strongly acid	Metasedimentary rocks	Excessively drained	Slow	"	"	10"-20"	1.1 to 2.6	"	Forest and watershed
4M4E-72/BD-1	DORADO loam, 2-16% slopes	IVe4 C-18	Gently to strongly sloping upland	Brown to dark brown loam, crumb, hard, slightly acid	Brown to reddish brown loam, blocky hard, slightly acid	Fine and medium grained medisedimentary rocks	Somewhat excessively drained	Moderate	Medium	Slight	"	1.5 to 3.5	"	Annual range
3M4E-72/BD-1	DORADO loam, mod. deep, 2-16% slopes	IIIe8 C-18	"	"	"	"	Well drained	"	"	"	20-36	3 to 6	Moderate	"
4rM4E-72/E-1 4M4E-72/E-1	DORADO rocky loam, 16-31% slopes	VIe4 C-18	Moderately steep upland	Brown to dark brown rocky loam, crumb, hard slightly acid	"	"	Excessively drained	"	Rapid	High	10-20	1.5 to 3.5	Low	"
4rM4E-72/FG-1	DORADO rocky loam, 31-75% slopes	VIIe4 C-18	Steep to very steep upland	"	"	"	"	"	"	"	"	"	"	"
3rM4E-72/EF-1 3M4E-72/E-1 3M4E-72/F-1	DORADO rocky loam, mod. deep, 16-51% slopes	VIe8 C-18	Moderately steep to steep uplands	"	"	"	Somewhat excessively drained	"	"	"	20-36	3 to 6	Moderate	"

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SURVEY AREA or WORK UNIT Mariposa Soil Survey Area (Northern Part - BLM and Adjacent Private Lands)

Date September 1963 Prepared by C. Beutler and D. Dierking Sheet 5 of 8

Map Symbol	Soil Name	Cap. Unit	Position	Soil Profile (dry)			Natural Drainage	Subsoil Perm.	Runoff	Erosion Hazard	Effective Depth (inches)	A.W.C. (inches)	Fertility	Present Use
				Surface Layer	Subsoil	Substratum or Parent Material								
4M4E-71/E-1 4M4E-71/BD-1 4rM4E-71/E-1	DAULTON loam, 16-31% slopes	VIe4 C-18	Moderately steep uplands	Dark grayish brown loam, blocky, slightly to very hard, slightly acid	Same as surface	**Fine** and medium grained metasedimentary rocks	Somewhat Excessively drained	Moderate	Rapid	High	10-20	1.5 to 3.5	Low	Annual range
4rM4E-71/FG-1	DAULTON rocky loam, 31-75% slopes	VIIe4 C-18	Steep to very steep uplands	Dark grayish brown loam, blocky, slightly to very hard, slightly acid	Same as surface	Fine and medium grained metasedimentary rocks	Excessively drained	"	"	"	"	"	Moderate to low	Annual range
1M4-1/A-1 1M4-1/B-1 1M4-1/A-1-w2, B-1-w2	FERNDALE loam, 1-5% slopes	IIw2 D-22	Nearly level to gently sloping alluvials	Grayish brown silt loam to loam, granular to massive, loose to slightly hard, medium acid	Grayish brown silt loam, massive, loose to hard, slightly to medium acid, may be gravelly	Mixed alluvium	Imperfectly drained	Moderate	Slow	Moderate	Less than 60	Less than 9	Moderate to high	Forest and pasture
4rM3C-81/BG-1	HENNEKE rocky loam, 2-75% slopes	VIIs9 C-18	Gently sloping to steep upland	Dark reddish gray to reddish brown, light clay loam, crumb, slightly hard, neutral	Dusky red, extremely stony and cobbly clay loam, friable, neutral	**Serpentinite and related rocks**	Somewhat excessively to excessively drained	Moderately slow	Medium to rapid	Moderate to high	5 to 30	1.5 to 3.5	Very low	Annual range & watershed
2rL4A-20/2rL43A-21/EF-1	HOLLAND-MUSICK rocky sandy loams, 16-51% slopes	VIe1 D-22	Strongly sloping to steep upland	Light brownish gray to grayish brown sandy loam, granular, soft to slightly hard, slightly acid	Brown to reddish yellow clay loam or silty clay, blocky, massive, hard to very hard, slightly to strongly acid	Granitic rocks	Well drained	Moderately slow over slow	Medium	Moderate	36-60	3.5 to 9	Moderate	Forest and range

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Map Symbol	Soil Name	Cap. Unit	Position	Soil Profile (dry)			Natural Drainage	Subsoil Perm.	Runoff	Erosion Hazard	Effective Depth (inches)	A.W.C. (inches)	Fertility	Present Use
				Surface Layer	Subsoil	Substratum or Parent Material								
4L4F-60/BE-1	Hornitos coarse sandy loam, 2-31% slopes	VIIs9 C-18	Gently sloping to moderately steep uplands	Reddish yellow coarse sandy loam, granular to massive, loose, medium acid	Reddish yellow to light reddish brown sandy loam, massive, slightly hard, medium acid.	Ione sandstone	Excessively drained	Moderate to mod. rapid	Medium	Moderate to high	10-20	1 to 3	Very low	Annual range
3M4E-70/BD-1	Josephine loam, 2-16% slopes	IIIe8 D-22	Gently sloping to strongly sloping uplands	Very pale brown loam, granular, hard, slightly acid	Reddish yellow heavy loam to clay loam, blocky, hard to very hard, medium acid	Metasedimentary rocks	Well drained	Moderate	"	Slight	"	3 to 6	Moderate	Forest and range
3M4E-70/E-1	Josephine loam, 16-31% slopes	IVe8 D-22	Moderately steep uplands	"	"	"	Somewhat Excessively drained	"	"	Moderate	"	"	"	"
3M4E-70/F-1	Josephine loam, 31-51%, slopes	VIe8 D-22	Steep uplands	"	"	"	Excessively drained	"	Rapid	High	"	"	"	"
2M4E-70/BC-1	Josephine loam, deep, 2-9% slopes	IIe1 D-22	Gently sloping to moderately sloping uplands	"	"	"	Well drained	"	Medium	Slight	36-60	5.5 to 10	"	"
2M4E-70/D-1	Josephine loam, deep, 9-16% slopes	IIIe1 D-22	Strongly sloping uplands	"	"	"	"	"	"	Moderate	"	"	"	"
2M4E-70/E-1 2M4E-70/F-1	Josephine loam, deep, 16-31% slopes	IVe1 D-22	Moderately steep uplands	"	"	"	Somewhat Excessively drained	"	"	"	"	"	"	"
3rM4E-70/DF-1	Josephine rocky loam, 9-51% slopes	VIe8 D-22	Strongly sloping to very steep uplands	"	"	"	"	"	Rapid	High	20-36	3 to 6	"	"
3rM4E-70/G-1	Josephine rocky loam, 51-75%	VIIe8 D-22	Very steep uplands	"	"	"	Excessively drained	"	"	"	"	"	"	"
4rM4E-76/E-1 3rM4E-76/EF-1	Laughlin rocky loam, 16-31% slopes	VIe4 C-18	Moderately steep uplands	Light yellowish brown to very pale brown loam, massive, slightly acid	Similar to surface layer	Fine and medium grained metasedimentary rocks	"	"	"	"	10-20	1.5 to 3.5	Low	Annual range & watershed
4rM4E-76/FG-1	Laughlin rocky loam, 31-75% slopes	VIIe4 C-18	Steep to very steep uplands	"	"	"	"	"	"	"	"	"	"	"

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Prepared by C. Beutler and R. Dierking

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Map Symbol	Soil Name	Cap. Unit	Position	Soil Profile (dry)			Natural Drainage	Subsoil Perm.	Runoff	Erosion Hazard	Effective Depth (inches)	A.W.C. (inches)	Fertility	Present Use
				Surface Layer	Subsoil	Substratum or Parent Material								
4M4E-74/EF-1	Mariposa loam, 16-51% slopes	VIs8 D-22	Moderately steep to steep uplands	Brown gritty loam, massive, hard, medium acid	Brown heavy silt loam, blocky, hard, medium to strongly acid.	Metasedimentary rocks	Excessively drained	Moderate	Rapid	High	10-20	1.5 to 3.5	Low	Forest and Range Mariposa
4M4E-74/G-2	Mariposa loam, 51-75% slopes	VIIs8 D-22	Very steep uplands	"	"	"	"	"	"	"	"	"	"	"
4rM4E-75/FG-1	Maymen rocky loam, 31-75% slopes	VIIe4 C-18	Steep to very steep uplands	Light brownish gray, pale brown to brown loam, granular, soft, medium acid, may have rock fragments	Light yellowish brown, loam, granular, slightly hard, medium to strongly acid, may have rock fragments	Metasedimentary rocks	"	"	"	"	"	"	"	Annual range & watershed May-men
5rXE-92/FG-1	Maymen soil material, 31-75% slopes	VIIs4 C-18	"	"	--	"	"	"	"	"	Less than 10	Less than 1.5	"	"
5rXE-92/H-2	Maymen soil material, over 75% slopes	VIII el C-18	Very steep uplands	"	--	"	"	"	"	"	"	"	"	"
1M43A-21/BC-1	Musick loam, 2-9% slopes	IIel D-22	Gently to moderately sloping uplands	Brown to strong brown loam, massive, soft, slightly acid	Reddish yellow clay loam, blocky to massive, hard to very hard, slightly to strongly acid	Weathered granitic rocks	Well drained	Moderately slow	Medium	Slight	Less than 60	Less than 9	Moderate to high	Forest, range, pasture, orchard
1M43A-21/D-1	Musick loam, 9-16% slopes	IIIel D-22	Strongly sloping uplands	"	"	"	"	"	"	"	"	"	"	"
2M43E-79/F-1	Sites loam, 31-51% slopes	VIel D-22	Steep uplands	Brown heavy sandy loam, loose, granular, slightly acid	Red to yellowish red, light clay or clay loam, blocky, very hard, medium acid	Weathered metasedimentary rock	Excessively drained	"	Rapid	High	36-60	5.5 to 10	Moderate	Forest & range

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Map Symbol	Soil Name	Cap. Unit	Position	Soil Profile (dry)			Natural Drainage	Subsoil Perm.	Runoff	Erosion Hazard	Effective Depth (inches)	A.W.C. (inches)	Fertility	Present Use
				Surface Layer	Subsoil	Substratum or Parent Material								
3M43A-33/BD-1 3rM43A-33/BD-1 2M43A-33/D-1	Trabuco-Fallbrook loams, 2-16% slopes	IIIe8 C-18	Gently to strongly uplands	Brown to reddish brown, light loam, massive, hard, slightly acid	Reddish brown sandy clay loam to clay, massive to blocky, very hard, slightly acid	Coarse grained basic and acid igneous rock.	Well drained	Moderately slow to slow	Medium	Slight	20-36	3 to 6	Moderate	Annual range
3rM43A-33/EF-1	Trabuco-Fallbrook rocky loams, 16-51% slopes	VIe8 C-18	Moderately steep to steep uplands	"	"	"	Somewhat excessively drained	"	Rapid	High	"	"	"	"
5rME-72/CF-1 4erM4E-72/CF-1	Whiterock rocky loam, 5-51% slopes	VIIs4 C-18	Moderately sloping to steep uplands	Pale brown to light yellowish brown loam, crumb, slightly hard, medium acid	Light brown loam, massive, hard, medium acid	Metasedimentary rock	"	--	"	"	Less than 10	Less than 1.5	Low	Range & pasture
1sM4-16/BC-1 1X-94/BC-1 1H3-101/BC-1-w1	Loamy alluvials, 2-9% slopes	IIe1 C-18	Gently to moderately sloping alluvial fans and stream	Light brownish gray to dark brown sandy loam to clay loam, neutral to slightly acid	Similar to surface layer but lighter colored and may be medium acid	Acid and basic igneous and mixed alluvium	Moderately well to well drained	Rapid to moderately slow	Slow	Slight to moderate	Less than 36	3.5-9	Moderate to high	Range and pasture
MT	Mine dumps	VIIs4 C-18	--	--	--	--	--	--	--	--	--	--	--	--
MT & RX RX	Riverwash and mine tailings	VIIs0 C-18	--	--	--	--	--	--	--	--	--	--	--	--
RL	Rockland	VIIIe1 C-18	--	--	--	--	--	--	--	--	--	--	--	--

CALIFORNIA STATE POLYTECHNIC COLLEGE
GREENHOUSE POT STUDIES

One technique of determining nutrient levels of soils is to grow selected plants in potted samples of soils using various fertilizer treatments. This is accomplished by comparing full treatments (fertilizer combinations) with partial treatments. Thus, to test for phosphate deficiency, it is necessary to supply adequate amounts of all other elements that might be limiting. Therefore, in order to assess phosphate deficiency, the following treatments must be compared:

Full treatment: nitrogen and phosphorus and potassium
Partial treatment: nitrogen and potassium, (no phosphorus)

The difference in plant yield will then be a measure of the phosphorous supplying power of the soil when nitrogen and potassium are not limiting. Deficiencies of other elements may be obtained in a like manner.

PLANTS SUITABLE FOR POT CULTURE

We have tried a great many different indicator plants in our studies but always come back to Romaine lettuce for student growing because of the time factor. Romaine has been exceedingly effective in indicating nitrogen and phosphorous conditions in soils but not potassium. This plant is not of much value in indicating the need of soil correctives, hence the use of soil analysis becomes necessary.

FERTILIZER RATES OF APPLICATION

In order to insure favorable nutrient conditions, fertilizer rates of application are higher in pot cultures than those usually made in field practices. General experience with pot cultures of soils from many sections of California have shown that nutrient deficiencies can be corrected in most instances with the following rate of application for the major plant nutrients:

N_2 - N - 200 lbs. per acre (e.g., 597 lbs. of 33.5% NH_4NO_3 or 952 lbs. of 21% $(NH_4)_2SO_4$)

P_3- P_2-05 - 300 lbs. per acre (e.g., 652 lbs. of 46% Treble Super or 1579 lbs. of 19% Single Super)

K_1- K_2O- 100 lbs. per acre (e.g., 227 lbs. of 44% K_2SO_4)

The rates are symbolized as N_2, P_3, and K_1, respectively in order to label pots and indicate actual amounts of nutrients applied.

Past experience has shown that the most useful combinations of nutrients and rates of application to determine nutrient deficiencies are as follows:

I $N_oP_oK_o$ No fertilizer (control)   II $N_2P_3K_1$ Full treatment

III $N_oP_3K_1$ Full treatment minus nitrogen IV $N_2P_0K_1$ Full treatment minus phosphorous

V $N_2P_3K_o$ Full treatment minus potassium

INTERPRETATION OF RESULTS

Results of pot tests should not be applied blindly to field crop conditions. Growth conditions in the field tend to be less favorable than in pot cultures, consequently, the effects of treatments less pronounced. Relative yields of dry weights on a percentage basis should be used to determine the need for any given element. This is done by comparing any treatment with the corresponding full treatment.
($N_2P_3K_1$= 100) as follows:

Treatment	Dry Weight	Relative Yield
$N_2P_3K_1$	9.0	100%
$N_2P_oK_1$	2.0	2/9 = 22%

Deficiency Scale for Interpreting Results

			Deficiency				
100%	Comparison	Nutrient	Definite	Probable	Uncertain	Satisfactory	
NPK	PK	Nitrogen	0-20	20-50	50-70	70-90	90+
NPK	NK	Phosphorus	0-20	20-50	50-65	65-80	80+
NPK	NP	Potassium	0-65	65-75	75-80	80-85	85+
NPKS	NPK	Sulfur	0-66	66-76	77-83	83-90	90+
NPKL	NPK	Lime	0-55	55-73	74-80	80-90	90+

FERTILIZER RECOMMENDATIONS

Use the relative yield for NPK needs and soils tests for kinds of NPK fertilizer recommended. Where acute deficiencies occur, apply sufficient fertilizer to replace the entire amount removed by the crop. Where only a probable deficiency occurs, apply sufficient fertilizer to replace one-half that removed by the crops.

CROP REMOVAL

		Removal - Pounds of		
	Yield	N	P_2O_5	K 20
Alfalfa	8 tons	374	94	360
Barley	100 bu.	90	40	25
Beets (sugar)	30 tons	109	44	100
Corn (grain)	100 bu.	78	36	26
Cotton	3 bales	130	62	48
Potatoes	500 bu.	108	42	192
Tomatoes	30 tons	180	60	240

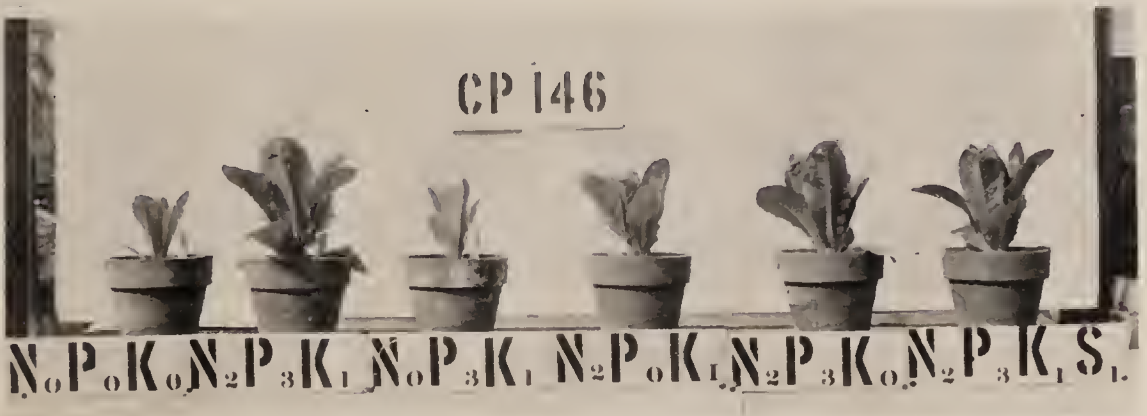
NUTRIENT LEVEL DETERMINATIONS BY GREENHOUSE POT STUDIES

Sample No.: CP-146(7) from Mariposa Soil Conservation District, Mariposa County, California.

Location: Roscoe Bower property. Photo 2-13

Soil Description: Ahwahnee sandy loam from granitic parent material. Rainfall 25". pH: 6.0

Cropping History: Permanent pasture. Grain past 20 years. Grain-fallow-grain planned.



Results: Yields of Romaine lettuce grown in greenhouse in 1957:

Treatment	Dry Weight in Grams	% Relative Yield	Nutrient Deficiency
$N_0P_0K_0$	1.2	19	-
$N_2P_3K_1$	6.3	100	-
$N_0P_3K_1$	1.2	19	Definite - N
$N_2P_0K_1$	3.6	58	Uncertain - P
$N_2P_3K_0$	5.5	87	Satisfactory - K
$N_2P_3K_1S_1$	5.1	81	Satisfactory - S

Field Application: Greenhouse studies show a definite need for Nitrogen and a slight shortage of phosphorus. Soil analysis indicate a need for nitrogen with some phosphorus and lime. Ammo-phos (16-20) plus lime would be best.

Soil Science Department, California State Polytechnic College, San Luis Obispo, California
12-11-56

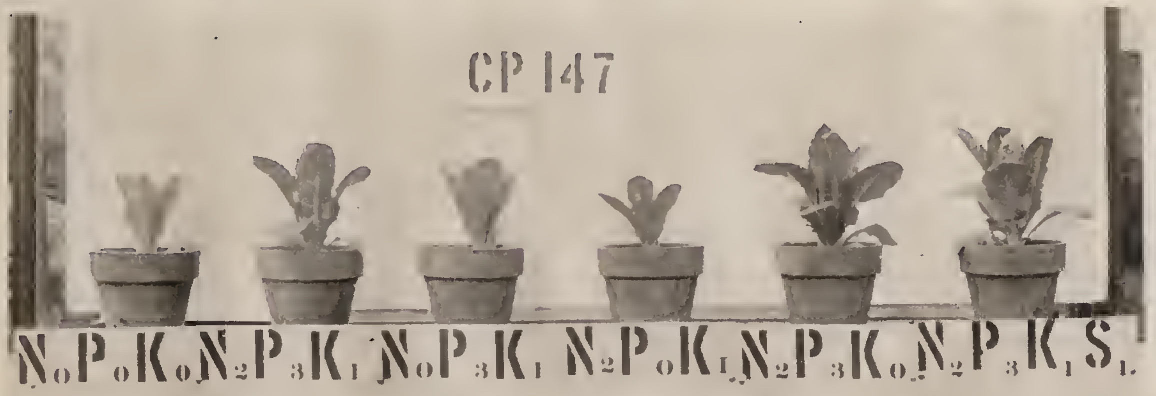
NUTRIENT LEVEL DETERMINATIONS BY GREENHOUSE POT STUDIES

Sample No.: CP-147(8) from Mariposa Soil Conservation District, Mariposa County, California

Location: Roscoe Bower property. Photo 2-13 subsoil sample of CP-146(7).

Soil Description: Ahwahnee sandy loam from granitic parent material. Rainfall 25". pH: 6.0

Cropping History: Permanent pasture. Grain past 20 years. Grain - fallow - grain planned.



Results: Yields of Romaine lettuce grown in greenhouse in 1957:

Treatment	Dry Weight in Grams	% Relative Yield	Nutrient Deficiency
$N_0P_0K_0$	1.1	26	-
$N_2P_3K_1$	4.2	100	-
$N_0P_3K_1$	2.2	52	Uncertain - N
$N_2P_0K_1$	1.0	25	Definite - P
$N_2P_3K_0$	4.6	110	Satisfactory - K
$N_2P_3K_1S_1$	4.4	105	Satisfactory - S

Field Application: Greenhouse studies show a definite need for phosphorus and a slight need for nitrogen. Soil analysis show a need for NP. Superphosphate after liming would be best followed with 16-20.

Soil Science Department, California State Polytechnic College, San Luis Obispo, California
12-11-56

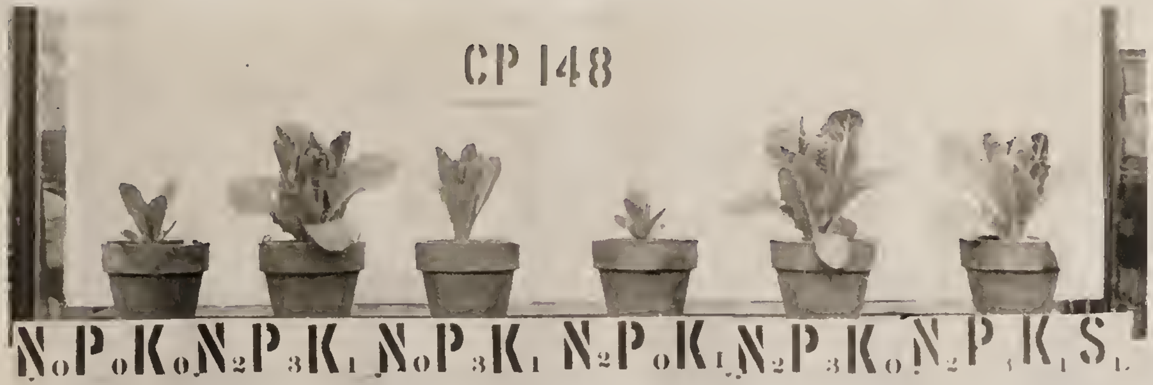
NUTRIENT LEVEL DETERMINATIONS BY GREENHOUSE POT STUDIES

Sample No: CP-148(9) from Coulterville - Greeley Soil Conservation District, Mariposa County, California

Location: Edward F. McMahon property. 1/2 mile west of Herbeck.

Soil Description: Auburn clay loam from basic igneous rock. Rainfall 25". pH: 6.0

Cropping History: Grain for past 30 years.



Results: Yields of Romaine lettuce grown in greenhouse in 1957:

Treatment	Dry Weight in Grams	%Relative Yield	Nutrient Deficiency
$N_0P_0K_0$	1.1	17	-
$N_2P_3K_1$	6.8	100	-
$N_0P_3K_1$	1.7	25	Definite - N
$N_2P_0K_1$	0.8	12	Definite - P
$N_2P_3K_0$	6.4	93	Satisfactory - K
$N_2P_3K_1S_1$	6.3	92	Satisfactory - S

Field Application: Greenhouse studies indicate a definite shortage of nitrogen and phosphorus. Soil analysis show a need for NPK calcium and sulfur. Low pH and phosphorus main problem.

Soil Science Department, California State Polytechnic College, San Luis Obispo, California
12-12-56

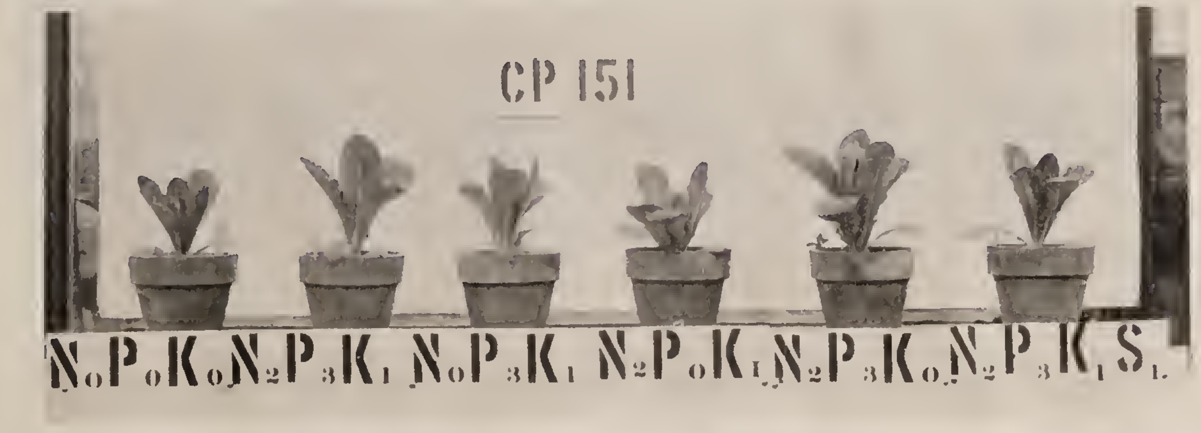
NUTRIENT LEVEL DETERMINATIONS BY GREENHOUSE POT STUDIES

Sample No: CP-151(12) from Coulterville - Greeley Soil Conservation District, Mariposa County, California

Location: See photo 16-27

Soil Description: Daulton clay loam from decomposed shale rock. Rainfall 20". pH:6.0

Cropping History: Range Land



Results: Yields of Romaine lettuce grown in greenhouse in 1957:

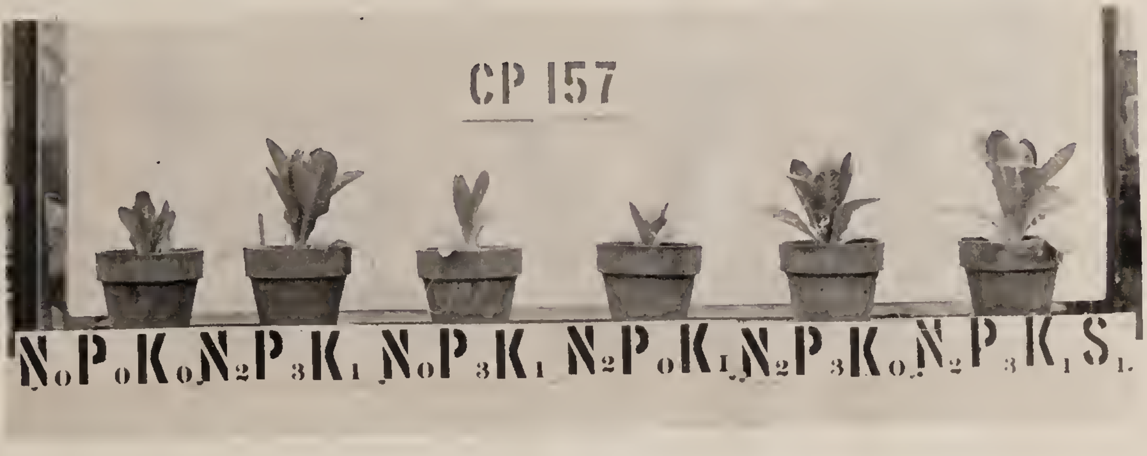
Treatment	Dry Weight in Grams	% Relative Yield	Nutrient Deficiency
$N_0P_0K_0$	1.6	42	-
$N_2P_3K_1$	3.9	100	-
$N_0P_3K_1$	1.4	37	Probable - N
$N_2P_0K_1$	2.1	54	Uncertain - P
$N_2P_3K_0$	3.9	99	Satisfactory - K
$N_2P_3K_1S_1$	2.1	54	Satisfactory - S

Field Application: Greenhouse studies indicate a shortage of nitrogen and phosphorus. Soil analysis show a need for NPKS and calcium. Low pH and a deficiency of PK Ca and S main problem.

Soil Science Department, California State Polytechnic College, San Luis Obispo, California
12-12-56

NUTRIENT LEVEL DETERMINATIONS BY GREENHOUSE POT STUDIES

Sample No: CP-157 (18) from Mariposa Soil Conservation District, Mariposa County, California.
Location: L. E. Schatz Property. Irrigated pasture south of barn.
Soil Description: Sierra sandy loam from granitic rock. Rainfall 30". PH:6.5
Cropping History: Irrigated pasture.


CP 157
$N_0P_0K_0$ $N_2P_3K_1$ $N_0P_3K_1$ $N_2P_0K_1$ $N_2P_3K_0$ $N_2P_3K_1S_1$

Results: Yields of Romaine lettuce grown in greenhouse in 1957:

Treatment	Dry Weight In Grams	% Relative Yield	Nutrient Deficiency
$N_0P_0K_0$	0.4	16	--
$N_2P_3K_1$	2.8	100	--
$N_0P_3K_1$	0.8	28	Definite - N
$N_2P_0K_1$	0.3	13	Definite - P
$N_2P_3K_0$	2.2	81	Satisfactory - K
$N_2P_3K_1S_1$	2.6	93	Satisfactory - S

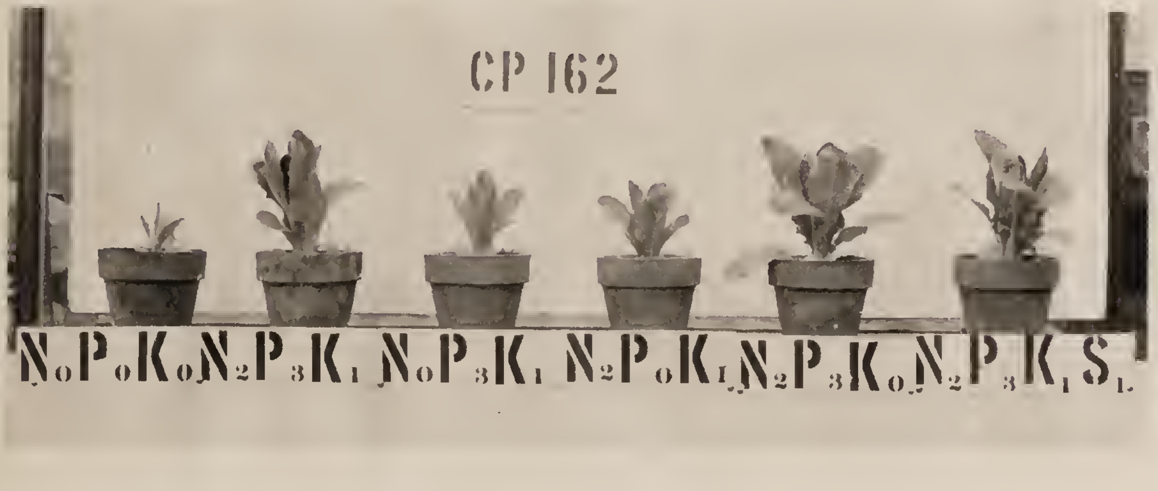
Field Application: Greenhouse studies show a definite shortage of nitrogen and phosphorus. Soil Analysis indicate a need for NP and calcium. Low PH and a deficiency of NP and Ca main problem.

Soil Science Department, California State Polytechnic College, San Luis Obispo, California.
12-26-56

CP-157

NUTRIENT LEVEL DETERMINATIONS BY GREENHOUSE POT STUDIES

Sample No: CP-162 (23) from Mariposa Soil Conservation District, Mariposa County, California.
Location: Dayton Ranch. White Rock Road and Mariposa Creek crossing.
Soil Description: Auburn loam from basic igneous rock. Rainfall 20". PH:6.0.
Cropping History: Range land



Results: Yields of Romaine lettuce grown in greenhouse in 1957:

Treatment	Dry Weight in Grams	% Relative Yield	Nutrient Deficiency
$N_oP_oK_o$	0.1	2	--
$N_2P_3K_1$	3.9	100	--
$N_oP_3K_1$	1.5	28	Definite - N
$N_2P_oK_1$	2.3	59	Uncertain - P
$N_2P_3K_o$	3.9	100	Satisfactory - K
$N_2P_3K_1S_1$	3.6	92	Satisfactory - S

Field Application: Greenhouse studies show a definite need for nitrogen and some need for phosphorus. Soil analysis indicate a N & P shortage. Low PH NP deficiency main problem.

Soil Science Department, California State Polytechnic College, San Luis Obispo, California.
12-26-56

SOIL DESCRIPTIONS

Type A
[illegible]
B
[illegible]
C
[illegible]
L
[illegible]

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE, [illegible]
[illegible], CALIFORNIA
September [illegible]

Mariposa Soil Survey Area (Northern part)
Index Legend

[illegible] Symbol	Acres	Name (Tentative)	Type	[illegible]
[illegible]	3121			
[illegible]	7			
[illegible]	45			
	3173t	Aiken stony loam, 16-51% slopes.	B	[illegible]
[illegible]	770t	Aiken stony loam, 51-75% slopes.		[illegible]
[illegible]	452			
[illegible]	38			
[illegible]	59			
[illegible]	23			
[illegible]	110			
[illegible]	9			
	691t	Aiken stony loam, erod. 16-51% slopes.		[illegible]
[illegible]	492			
[illegible]	190			
	682t	Aiken stony loam, severely eroded 31-75% slopes		[illegible]
[illegible]	1227t	Argonaut loam, 2-16% slopes.		[illegible]
[illegible]	[illegible]	Argonaut loam, 16-31% slopes.		[illegible]
[illegible]	[illegible]	Argonaut loam, shallow, 2-16% slopes.		[illegible]
[illegible]	[illegible]	Argonaut loam, shallow, 16-31% slopes.		[illegible]
[illegible]	1095t	Argonaut rocky loam, 16-51% slopes.		[illegible]
[illegible]	[illegible]	Argonaut rocky loam, shallow, 3-31% slopes		[illegible]
[illegible]	[illegible]	Argonaut rocky loam, shallow, 31-51% slopes		[illegible]
[illegible]	99t	Auberry-Sierra rocky sandy loams, 2-16% slopes.		[illegible]
[illegible]	291t	Auberry-Sierra rocky sandy loams, 16-31% slopes.		[illegible]
[illegible]	[illegible]	Auberry-Sierra rocky sandy loams, 31-75% slopes.		[illegible]

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE (CALIFORNIA)
[illegible], CALIFORNIA
September 20, 19[illegible]

[illegible] Soil Survey Area (Northern Part)
Mapping Legend

[illegible]	Acres	Name (Tentative) Tpc	[illegible]
[illegible]	441 1112 2229t	Auburn extremely rocky loam, 2-75% slopes.	[illegible]
[illegible]	2125t	Auburn loam, 2-15% slopes C	[illegible]
[illegible]	370t	Auburn loam, 16-31% slopes	[illegible]
[illegible]	1089 116 1205t	Auburn loam, moderately deep, 2-16% slopes	[illegible]
[illegible]	393t	Auburn loam, moderately deep, 16-31% slopes.	[illegible]
[illegible]	[illegible] [illegible] 91t	Auburn loam, moderately deep, 31-51% slopes.	[illegible]
[illegible]	[illegible]	Auburn rocky loam, 16-31% slopes	[illegible]
[illegible]	[illegible]	Auburn rocky loam, 31-75% slopes.	[illegible]
[illegible]	[illegible]	Auburn rocky loam, moderately deep, 2-16% slopes.	[illegible]
[illegible]	[illegible]	Auburn rocky loam, moderately deep, 16-51% slopes	[illegible]
[illegible]	1756t	Auburn rocky loam, moderately deep, 31-75% slopes	[illegible]
[illegible]	[illegible]	Auburn soil material, 31-75% slopes.	[illegible]
[illegible]	5002t	Auburn stony loam, moderately deep, 2-31% slopes.	[illegible]
[illegible]	3159t	Auburn stony loam, 31-45% slopes.	VII[illegible]

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE, CALIFORNIA
MARIPOSA, CALIFORNIA
September 30, 1963

Mariposa Soil Survey Area (Northern Part)
Index Legend

Mapping Unit Symbols	Acres	Name (Tentative)	Cap Uni
[illegible]-35/EE-3	1209t	[illegible] rocky loam, severely eroded, 31-75% slopes.	VIIe[illegible]
[illegible]-77/EE-1 [illegible]-77/DD-1	180 91 271t	Sandarita gravelly silt loam, 16-51% slopes.	VIe[illegible]
[illegible]-72/BB-1	2706t	Dorado loam, 2-16% slopes.	IVe[illegible]
[illegible]-72/BB-1	76t	Dorado loam, moderately deep, 2-16% slopes.	IIIe[illegible]
[illegible]-72/D-1 [illegible]-72/A-1	672 33 705t	Dorado rocky loam, 16-31% slopes.	VIe[illegible]
[illegible]-72/EE-1	3193t	Dorado rocky loam, 31-75% slopes.	VIIe[illegible]
[illegible]-72/D-1 [illegible]-72/D-2 [illegible]-72/E-1	63 [illegible] 51 115t	Dorado rocky loam, moderately deep, 16-51% slopes.	VIe[illegible]
[illegible]-71/D-1 [illegible]-71/DD-1 [illegible]-71/D-1	951 214 17 975t	Daulton loam, 16-31% slopes	VIe[illegible]
[illegible]-71/EE-1	9364t	Daulton rocky loam, 31-75% slopes.	VIIe[illegible]
[illegible]/A-2 [illegible]/B-2 [illegible]	62 60 15 137t	Ferndale loam, 1-5% slopes.	IIs[illegible]
[illegible]-5E/EE-3	2992t	Henneke rocky loam, 2-75% slopes. D	VIIs[illegible]

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE, CALIFORNIA
MARIPOSA, CALIFORNIA
September 10, 1963

Mariposa Soil Survey Area (Northern Part)
Index Legend

Mapping Unit Symbols	Acres	Name (Tentative)	Cap Unit
[illegible]-20/2ri43A-21/EF 1	338t	Holland - Musick rocky sandy loam, 16-51% slopes.	VIe1
[illegible]-60/BE-1	41t	Hornitos coarse sandy loam, 2-31% slopes	VII[illegible]
[illegible] 70/BD-1	356t	Josephine loam, 2-16% slopes. C	IIIe8
[illegible]-70/E-1	629t	Josephine loam, 16-31% slopes.	IVe8
[illegible]-70/F-1	1500t	Josephine loam, 31-51% slopes	VIe8
[illegible]-70/BC-1	105t	Josephine loam, deep, 2-9% slopes.	IIe1
[illegible]-70/D-1	206t	Josephine loam, deep, 9-16% slopes	IIIe1
[illegible]-70/E-1 [illegible] 70/F-1	80 9 89t	Josephine loam, deep, 16-31% slopes.	IVe1
[illegible]-70/DF-1	634t	Josephine rocky loam, 9-51% slopes.	VIe8
[illegible]-70/G-1	83t	Josephine rocky loam, 51-75% slopes	VIIe8
[illegible]-76/E-1 [illegible]-76/EF-1	1623 66 1689t	Laughlin rocky loam, 16-31% slopes C	VIe
[illegible] 76/FG 1	1900t	Laughlin rocky loam, 31-75% slopes.	VIIe[illegible]
[illegible]-74/EF-1 [illegible]-74/G-2	4722t 716t	Mariposa loam, 16-51% slopes. Mariposa loam, 51-75% slopes.	VIs8 VIIs8
[illegible]-75/FG-1	52t	Maymen rocky loam, 31-75% slopes	VIIe[illegible]
[illegible]-99/FG-1	21018t	Maymen soil material, 31-75% slopes	VIIs[illegible]
[illegible]-99/H-2	13554t	Maymen soil material, over 75% slopes.	VIIIe1

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE, CALIFORNIA
[illegible], CALIFORNIA
September 10, 1963

Mariposa Soil Survey Area (Northern Part)
Index Legend

Mapping Unit Symbols	Acres	Name (Tentative)	Cap. Unit
[illegible]-21/BC-1	20t	Musick loam, 2-9% slopes.	III
[illegible]-21/D-1	70t	Musick loam, 9-16% slopes.	IIIe
[illegible]-79/F-1	51t	Sites loam, 31-51% slopes. c	VIe
[illegible]-33/Bb-1	30		
[illegible]-33/Bb-1	12		
[illegible]-33/[illegible]-1	11		
	153t	Trabuco - Fallbrook loams, 2-16% slopes.	IIIe
[illegible]-33/EF-1	93t	Trabuco - Fallbrook rocky loams, 16-51% slopes.	VIe
[illegible]-72/EF-1	255		
[illegible]-72/EF-1	35		
	290t	Whiterock rocky loam, 5-51% slopes.	VIIe
[illegible]	13		
[illegible]-25/BT-1	60		
[illegible]	130		
	203t	Loamy Alluvial, 2-9% slopes.	IIe
[illegible]	123t	Mine dumps	VIIIs
[illegible]	108		
[illegible]	99		
	207t	Riverwash and mine tailings	VIIw
[illegible]	2219	Rockland	VIIIs

and [illegible] which may include up to 5% [illegible] soils, [illegible], [illegible] soils, [illegible] soils formed from [illegible] and [illegible] on [illegible] rocks, [illegible] soils.

The [illegible] soils comprise a small percentage of soils in the northern part of [illegible] county soil survey area.

[illegible] corner of NE¼ of NE¼, Sec. 30, T. [illegible] S., R. [illegible] E., [illegible] ([illegible])

[illegible]-66
[illegible]

[illegible] stony loam, 30-51% slopes

O1 & O2 — Layer of partially decomposed grasses, conifer needles, mosses and shrub leaves and forbs; abrupt smooth lower boundary.

A1 — 0-3" Brown (7.5YR 5/4) dry, slightly loam, yellowish red (5YR 5/6 - 4/6) moist; very weakly fine subangular and moderately granular structure; slightly hard dry, friable, moist, nonsticky and nonplastic wet consistence; abundant micro and fine random roots; many micro and fine tubular, interstitial and vesicular pores; pH 6.0; clear wavy lower boundary.

B3 — 3-10" Reddish yellow (5YR 6/6) dry, yellowish red (5YR 4/6) moist, very stony, cobbly and gravelly silt loam; massive; very hard dry and friable moist, slightly sticky and slightly plastic wet; abundant random fine and micro roots, few random medium roots; common tubular micro and fine pores, few tubular medium pores; rock fragment content about 20 to 65%; pH 6.0; clear wavy lower boundary.

B1 10-18" Red (2.5YR 4/6) dry, to dark red (2.5YR 3/6) moist; stony, cobbly and gravelly clay loam; massive; very hard dry, variably firm and friable moist, slightly sticky and slightly plastic wet; abundant micro to fine random roots, plentiful common medium roots, few common coarse roots; many micro and fine tubular pores; few thin clay film bridging sand grains and lining pores; about 60% rock fragment content; pH 5.8; clear wavy lower boundary.

B21 18-32" Red (2.5YR 4/6) dry, to dark red (2.5YR 3/6) moist gravelly and cobbly light clay; moderately medium angular blocky and strongly medium subangular blocky structure; extremely hard when dry, very firm moist, plastic and sticky wet; abundant micro and fine random roots, common medium random roots, few coarse random roots; many moderately thick clay film on ped faces, common moderately thick clay film bridging sand grains and in pore linings; about 25% cobble and gravel size basalt fragments; pH 5.1; gradual irregular lower boundary.

B22/C1 32-40" Red (2.5YR 5/6) dry, to dark red (2.5YR 4/6-3/6) moist clay; moderately medium to fine angular blocky structure; extremely hard dry, very hard moist, plastic and sticky wet; very few micro and fine roots, very few to few micro common pores; many moderately thick clay film on ped faces, common moderately thick clay film lining pores, few thin

[illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] similar to [illegible] horizons; [illegible]
irregular lower boundary.

B2 10-30" [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] clay loam;
[illegible] subangular blocky [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] dry, [illegible]. plastic and slightly
sticky; [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] thick clay films [illegible]
[illegible] [illegible] [illegible] [illegible] with [illegible] pH [illegible]; clear
wavy lower boundary.

R 30+ [illegible] basic igneous and [illegible] bedrock.

Variations:

Texture of A horizons range from loams to light clay loams with a [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. Color ranges from brown (7.5YR moist) to [illegible] (7.5YR moist). Thickness of the A horizon is generally less than 10" [illegible] [illegible] [illegible] may be up to 20 [illegible]. The B2 horizon ranges from [illegible] loam to light clay and is usually modified with varying ([illegible] to many) cobbles, stones, and/or gravels. [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. Reaction is very slightly to medium acid. The [illegible] [illegible] ranges from clay loam to clay [illegible] [illegible] being [illegible] lower or all part of horizon. Colors are usually brown, yellow or [illegible] [illegible] to reddish brown. Rock fragment content varies from place to place. Reaction is in a medium acid range. C horizons are variable in texture from loams to clay loams and in color from brown (7.5YR moist) to red

(2.0% [illegible]) and may be massive or blocky in both. Some of the areas have variable amount of rock outcropping but seldom exceeds 10% except in very stony phases where it may go as high as 25%. Depth ranges mostly from 24 to about 40 inches with small inclusions of deeper and a little shallower soils.

Inclusions: Same as for Aiken Series as previously noted.

[illegible] **Aiken stony loam, deep, 10-50% slopes**

This unit is similar to Aiken rocky loam, 10-50% slopes except it is deeper [illegible] a little [illegible] for commercial timber growing. Included are small areas which may be as flat as 2% slope and small areas which are stony clay loams. Some small areas are comparatively free of rock [illegible] content.

[illegible] **Aiken stony loam, 51-75% slopes**

Similar in most respects to Aiken stony loam, 10-50% slopes except steeper and a little shallower to rock and rock fragment content in most areas. Depth variable is normally 24 to 40 inches but up to 15% is deeper and/or shallower.

[illegible] **Aiken stony loam, severely eroded, [illegible], 10-50% slopes**

[illegible] soils are similar to Aiken stony loam, 10-50% slopes, except [illegible] in [illegible] eroded. Included are small areas of [illegible] and small areas of soils as shallow as 15 inches.

[illegible]

Each of these [illegible] represent [illegible] curve. The intensified efforts to produce [illegible] in higher production, some additional [illegible] [illegible] may be in order.

[illegible] same as [illegible]

[illegible] same as [illegible]

[illegible] same as [illegible]

[illegible] same as [illegible]

ARGONAUT [illegible] - 13)

The Argonaut series is composed of, medium, non-Calcic brown soils developed from some basic and/or basic igneous parent rocks under grass. Dry, digger pine and/or some brush cover at elevations from 1000 feet to 3500 feet. These well drained moderately drained soils normally have medium and rapid runoff. The A horizons are brown to reddish yellow or yellowish red loams to light clay loams, slightly acid in reaction. The B1 horizons are mostly clay loams, massive and/or blocky, reddish yellow or yellowish red, and slightly acid in reaction. The B21 horizons may be from dark yellowish brown to reddish yellow or yellowish red in color from clay loam to clay in texture and massive or blocky in structure. Lower B2 horizons tend to be yellowish brown or brown in color, clay in texture and massive in structure. The lower B2 horizons tend to be medium acid in reaction. The soils usually overlie parent material consisting of diabase, amphibolites, diorites or other basic or intermediate igneous material in varying stages of decomposition.

Argonaut soils are associated with Henneke soils formed on serpentine in the Foothill Belt, generally with Sites soils, and Aiken soils which are on east and north slopes above 2,000 feet whereas Argonaut is on west and south slopes above this altitude in this association. Argonaut soils are similar to Sobrante soils which are better drained and less developed in the B2 horizons; Aiken soils which are Reddish Brown Lateritic soils formed under higher effective rainfall conditions and usually at higher elevations; and to Henneke soils which are primarily lithosolic soils developed on serpentine.

Argonaut soils as mapped include small bodies of other soils too complex in pattern or too small in area to delineate accurately on field maps used. Total inclusions of these other soils will not exceed 15 percent of any mapping unit which includes up to 2 percent Hennecke soils, 15 percent Auburn and/or Aiken soils.

The Argonaut soils comprise a minor acreage in the northern part of Mariposa Soil Survey Area.

3WA3B-16 / BD-1 Argonaut loam, 2-16 percent slopes

2,000 feet south, 400 feet west of N.W. corner Sec.19,T3S, R17E, M.D.B.&M., 0.13 mile from E. gate of Fraters ranch of road to Ponderosa Way (5% Slope - Oak-grass).

A11 0"-2" Yellowish red (5YR 5/6) light clay loam, yellowish red (5YR 4/6) moist; moderate medium crumb structure; hard friable, slightly plastic and slightly sticky; plentiful fine and micro roots; (pH 6.0); abrupt smooth lower boundry.

B11 2"-6" Reddish brown to yellowish red (5YR 5/4-5/6) clay loam, yellowish red (5YR 4/6) moist; massive; extremely hard, firm, slightly sticky and slightly plastic; somewhat hoof packed; plentiful fine and micro roots; (pH 6.0) medium acid; clear wavy boundary.

B12 6"-14" Yellowish red (5YR 5/6) clay loam, yellowish red (5YR 4/6) moist; moderate medium angular blocky structure; very hard, friable, slightly sticky and slightly plastic; few thin discontinuous clay film of ped faces and few thin bridging sand grains; (pH 6.0) medium acid; gradual wavy boundary.

B21 14"-20" Yellowish Brown to dark yellowish brown (10YR 5/6 - 4/6) clay dry and moist; massive; extremely hard, very firm, plastic and sticky, somewhat cobbly; many thick clay films bridging sand grains, filling pores; few fine and micro roots, gradual wavy boundary.

B22 Yellowish brown to brown (10YR - 7.5YR 5/4)clay moist; massive; extremely hard, extremely firm; sticky and very plastic; many thick clay films in pores; somewhat cobbly; (pH 5.0) very strongly acid; very few fine and micro roots; abrupt irregular boundry.

R Decomposed parent basic igneous bedrock.

VARIATIONS:

Except as noted in characteristic profile, biggest variations occur in color of B1 varying from yellowish red or reddish yellow to dark red (2.5YR 3/6) moist. Content of rock fragments in variable being somewhat gravelly in surfaces in places and gravelly and/or cobbly in subsoils. Depth varies from 20 to 36". Some profiles may have matting of yellowish brown to reddish yellow or yellowish red. The B2 lower horizon may be masked from true color by clay film being reddish yellow or yellowish red.

INCLUSION:

Included are soils which differ from Argonault description only in color and pH of lower B2 horizons. The horizons are reddish brown or reddish yellow in color and tend to be better drained and have slightly rather than medium acid reaction. These types of soils make up as high as 15 percent of Argonaut soils, but are too complex in pattern or too

small in area to delineate properly. Since the lower B2 horizon of Argonaut soils is usually less than 5 inch thick and at the bottom of the effective profile. Separation of this profile from the areas of redder color lower B2 horizons would not likely change management, use or production factors.

3M43E-46
E-1

Argonaut loam, 16 - 31 percent slopes

Similar to Argonaut loam, 2 - 16 percent slopes except may include a little larger percentage of soil with yellowish red clay B2 horizons and is steeper.

3rM43E-46
EP - 1

Argonaut rocky loam, 16 - 51 percent slopes

Similar to Argonaut loam 16 - 31 percent slopes except little steeper in places and has rock out cropping exceeding 3 percent up to 50 percent. Maybe stony, cobbly and/or gravelly in places.

4M43E-46
BD -1

Argonaut loam, shallow, 2 - 16 percent slopes

Similar to Argonaut loam, 2 - 16 percent in all respects except effective depth is less than 20 inches in most cases.

4M43E-46
E-1

Argonaut loam, shallow, (10"- 20"), 16 - 31 percent slopes

Similar to Argonaut loam, shallow, 2 - 16 percent except steeper.

4rM43E-46
DE-1

Argonaut rocky loam, 9 - 31 percent slopes

Similar to Argonaut loam, shallow, 16 - 31 percent slopes except rock out cropping exceeds 3 percent and slopes maybe less steep in places.

ArRCD-16
P-1

Argonaut rocky loam, shallow, 31 - 51 percent slopes

Similar to Argonaut rocky loam, shallow, 16 - 31 percent slopes except steeper.

Auberry Series

THE AUBERRY series is composed of medial Prairie soils developed from acid igneous granitic parent rocks under grass, oak, digger pine and/or brush at elevations from 1,000 to 3,000 feet. These well to excessively drained soils have medium and rapid runoff. The A horizons are light brownish gray to pale brown, sandy and fine sandy loams, slightly or medium acid and weakly granular or crumb structure or massive. The B horizons are pale brown or light yellowish brown sandy clay loams, slightly or medium acid, and blocky. Underlying C and/or R horizons consist of slightly to highly decomposed quartz diorites and/or granodiorites.

Sierra Series

THE SIERRA soils are composed of medial Non-Calcic Brown - Prairie intergrade soils developed from similar parent rocks, with same type cover, drainage and runoff as Auberry soils. The A horizons are grayish brown sandy loams, slightly acid, and crumb structure or massive. The B1 horizons are brown to yellowish brown loams, tending toward reddish brown moist, slightly acid, and weak blocky structure or massive. The B2 horizons are brown or reddish brown clay loams, reddish brown, moist, slightly acid and blocky structure. Underlying parent rock is mostly quartz diorite, slightly to highly decomposed.

Auberry and Sierra soils occur together in complex with Auberry being the dominant soil and generally are associated with reddish brown Lateritic Holland, Musick, and Aiken soils and with Non-Calcic Brown, Auburn, Argonaut, and [illegible] soils. [illegible] Auberry and Sierra soils include small areas

[illegible] as outcrops [illegible] secondary [illegible] of page [illegible]. Included will [illegible] up to 10% Holland and/or [illegible] soils, 1% [illegible] soils and 2% [illegible], [illegible] and/or [illegible] soils.

These soils form a very minor acreage in northern part of Mariposa [illegible] survey area.

Auberry-[illegible] - 27

[illegible]-27 Auberry-[illegible] rocky sandy loams, 2-16% slopes
[illegible]

[illegible]

Location of typical site of Auberry soils in this mapping unit — 0.8 miles north of Indian Peak Road on [illegible] Road, S. side, Section 11, T. 5 S., R. 19 E.

A1 0-1" Light brownish gray (10YR 6/2) sandy loam, very dark grayish brown (10YR 3/2) moist; massive to weak very fine crumb and weak fine to very fine granular structure; soft, friable, non-sticky, non-plastic; abundant fine to very fine, random roots; very few fine to medium [illegible] pores; slightly acid (pH 6.5); abrupt wavy boundary.

A12 1-9" Light brownish gray to pale brown (10YR 6/2-6/3) sandy loam, dark grayish brown to brown (10YR 4/2-4/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; plentiful fine random roots; very few very fine to fine random pores; medium acid (pH 6.0); clear wavy boundary.

A3 [illegible]" Light brownish gray to pale brown (10YR 6/2-6/3) sandy loam, dark grayish brown to brown (10YR 4/2-4/3) moist; massive;

slightly hard, friable, nonsticky and nonplastic; plentiful fine random roots; very few very fine to fine random pores; medium acid (pH 6.0); clear wavy boundary.

B2 16-32" Pale brown (10YR 6/3) light sandy clay loam, brown to dark brown (10YR 4/3) moist; moderate coarse angular blocky to subrounded blocky structure, with occasional cylindrical peds from 1/4 to 1" in diameter and up to 2 inches long; extremely hard, firm, slightly sticky and slightly plastic; few fine and plentiful very fine to micro random roots; common fine to very fine random pores; clay film, thin to moderately thick on ped faces and in pores, and few thin clay films forming bridges between sand grains; medium acid (pH 6.0); gradual lower boundary.

R 36"+ Decomposed acid igneous rock increasing in hardness and massiveness with depth.

Variations: Rock outcropping varies from 3 to 20% but normally does not exceed 10%. If more occurs the unit will be mapped as an inclusion to the 16 to 31% slope groups. Surface textures are mostly sandy loams but vary from coarse sandy loams to loams. B2 horizons are light sandy clay loams to heavy clay loams with small areas having a clay texture occuring below 24" deep. Color of B horizons vary from pale brown to brown to strong browns in the 10YR and 7,5YR hues. B1 and B3 horizons vary from heavy sandy loams to light clay loams in texture with same color range as B2. Horizons

vary from neutral to medium acid. Effective depth is from 20 to 36 inches for the most part.

Sierra

A typical profile is just 0.15 mile north of Auberry sample.

A11 0-1" Grayish brown (10YR 5/2) fine sandy loam, dark grayish brown (10YR 3/2) moist; moderate fine crumb structure; soft to slightly hard, friable, nonsticky and nonplastic; abundant fine and very fine random roots; many fine to very fine pores; slightly acid (pH 6.3); abrupt wavy boundary.

A12 1-11" Grayish brown (10YR 5/2) heavy sandy loam; dark to very dark grayish brown (10YR 4/2-3/2) moist; massive; soft to slightly hard, friable, nonsticky and nonplastic; plentiful fine to very fine random roots; common very fine and fine pores; slightly acid (pH 6.3); clear wavy boundary.

B1 11-17" Yellowish brown to brown (10-7.5YR 5/4) heavy loam, brown to reddish brown (7.5-5YR 4/4) moist; massive to very weak medium to angular blocky structure; hard, friable, nonsticky and very slightly plastic; few fine to very fine random roots; many fine to very fine random pores; few thin clay film forming bridges between sand grains and in pores; slightly acid (pH 6.3); reddish brown to dark reddish brown (5YR 4/4-3/4) crushed and moist; clear wavy lower boundary.

B21 17-26" Brown (7.5YR 4/4), sandy clay loam, reddish brown (5YR 4/4) moist; weak medium angular blocky structure; extremely hard,

firm, slightly sticky and slightly plastic; very few fine to very fine random roots; common fine to very fine random pores, common thin clay film forming bridges between sand grains and in pores; many moderately thick clay film on ped faces; slightly acid (pH 6.3); clear wavy boundary.

B22 26-32" Light brown (7.5YR 6/4) light sandy clay loam, rubbed, brown to dark brown (7.5YR 4/4) moist; weak medium angular blocky structure; extremely hard, firm, slightly sticky and slightly plastic; very few fine to medium random roots; common fine and very fine random pores; common thin clay film forming bridges between sand grains, common clay film on ped faces; slightly acid (pH 6.3); clay film brown to reddish brown in color and multicolored sand grains made dry color determination difficult without rubbing, crushed moist color reddish brown (5YR 4/4); abrupt irregular lower boundary.

R 32"+ Acid igneous parent rock from quartz diorite, highly decomposed but increasing in hardness and massiveness with depth.

Variations: Rock is outcropping less than 20%. If more, it will be included in 16-31% slope units. B2 horizons are normally as red as 5YR hues or redder moist but dry may have 7.5YR hue colors. Surface horizons are medium to slightly acid and subsoils are very strongly acid to slightly acid. Effective soil depth range is from 20" to 36".

ArE16-27
E-1 Auberry-Sierra rocky sandy loams, 16-31% slopes

These soils are similar to Auberry-Sierra rocky sandy loams 2-16% slopes except steeper and in some cases up to 50% rock outcrop areas are included.

ArF31-27
EF-1 Auberry-Sierra rocky sandy loams, 31-75% slopes

The soils are similar to Auberry rocky sandy loams, 16-31% slopes except steeper and tend to be a little stonier.

[illegible] soils as mapped include small bodies of other soils which are too complex in pattern to delineate with acceptable accuracy or too small to [illegible] separately. Total inclusions will not exceed 15 percent of any mapping unit but individual mapping units may include up to 7 percent [illegible] soils, 5 percent [illegible] soils, 8 percent Argonaut soils, 1 percent [illegible] and/or Hamilton soils, 3 percent Laughlin soils. The [illegible] soils comprise a substantial percentage of the area in the northern part of the Jackson County Soil Survey Area.

[illegible]

[illegible] rocky loam, 16-31% slopes

A typical location site would be NE corner SW¼ Sec 17 [illegible] W.M. - ½ mi W of [illegible].

A1 0-7" (5YR 4/2) reddish brown heavy loam, (5YR 3/3) dark reddish brown moist; weakly medium to coarse granular blocky structure; hard dry, firm moist, very slightly plastic and very slightly sticky when wet; roots common; slightly acid (pH 6.2); gradual wavy lower boundary.

B2 7-20" ([illegible]) reddish brown clay loam, ([illegible]) dark reddish brown moist; moderately fine to medium subangular blocky structure; dry hard, firm moist, slightly sticky and plastic wet; roots common; continuous clay film of moderate thickness in pores and on ped faces; slightly acid (pH 6.1); abrupt irregular lower boundary.

C/R zone: Decomposed conglomerate basic rock increasing in hardness with depth. Few small pockets of plastic clay finger into cracks of the rock formation.

Variations: Surface colors of [illegible] soils are usually (7.5YR 4/4-5/6) strong brown to (5YR 5/4-4/4) reddish brown with few small inclusions of (10YR 5/4) brown. Moist colors are slightly darker and tend toward more reddish hues. Textures of A horizons vary from silt loams or light loams to light clay loams. B horizons vary from reddish yellow (5YR 5/8-6/6) to reddish brown (5YR 5/4-4/4) to dark reddish brown (5 - 2.5YR 3/4-3/4) with small inclusions being brown (7.5YR 5/4). Moist, the colors are a little darker and a little redder. Textures of upper B horizons vary from loam to light clay loam and the lower B horizons from heavy loams to heavy clay loams with small included areas having a comparatively thin clay layer over parent rock. Rock outcropping (5-50 percent) is quite variable and some areas may be stony, cobbly and/or gravelly.

Inclusions: [illegible] soils as mapped include small bodies of other soils which are too complex in pattern to delineate with acceptable accuracy or too small to manage separately. Total inclusions will not exceed 15 percent of any mapping unit but individual

mapping units may include up to 2 percent Sobrante soils, 5 percent Sites soils, 2 percent Argonaut soils, 3 percent [illegible] and/or [illegible] soils, 2 percent Laughlin soils. The Auburn soils comprise a substantial percentage of the area in the northern part of the Mariposa County Soil Survey Area. Also some small areas are included (about 2 to 4 percent) that are [illegible] in texture. A few areas (2 to 4 percent) have clay in the lower B horizons.

Auburn extremely rocky loam, 2-75% slopes

This soil is similar to Auburn rocky loam, moderately deep, 15-50% slopes, except that rock outcrop and rock particle content (50-90%) and include some flatter and steeper slopes. Because of rock sliding on steep and very steep slopes there are pockets of colluvium included, but profile characteristics except for [illegible] of stone content and [illegible] are similar to Auburn in all respects. The slopes [illegible] less than 50% [illegible].

Auburn loam, 2-15% slopes

Similar to Auburn rocky loam, 15-50% slopes except is less steep and rocky.

Auburn loam, 15-30% slopes

Similar to Auburn rocky loam, 15-50% slopes, except it is less rocky.

[illegible] and [illegible]

Auburn loam, moderately deep, 2-16% slopes

Similar to Auburn rocky loam, 16-31% slopes except rock outcropping is less than 1 percent and effective depth is from 20 to 36" with some small areas being over 36" deep to restrictive parent rock. Many of these areas are or have been cultivated.

[illegible]

Auburn loam, moderately deep, 16-31% slopes

Similar to Auburn loam, moderately deep, 2-16% slopes, except steeper. Some small areas are moderately eroded.

[illegible] and [illegible]

Auburn loam, moderately deep, 31-51% slopes

Similar to Auburn loam, moderately deep, 16-31% slopes, except steeper and maybe a little more eroded in unprotected places.

[illegible]

Auburn rocky loam, 31-75% slopes

Similar in all respects to Auburn rocky loam, 16-31% slopes, except steeper. Dominant slope ranges from 31 to 51%, but some areas are steeper. Even in the steeper slopes there are areas of less steep slopes which make up a sizeable part of the unit.

[illegible]

Auburn rocky loam, moderately deep, 2-16% slopes

Similar in all respects to Auburn loam, moderately deep, 2-16% slopes, except rock outcropping is usually 2 to

and near 15 percent. If rock outcropping exceeds 15 percent it will be included in the following soil as part of the inclusions.

[illegible]

Auburn rocky loam, moderately deep, 16-30% slopes

Similar to Auburn loam, 16-30% slopes, except is deeper and includes steep slopes (31-50 percent). Much of this is associated with Aiken soils.

[illegible]

Auburn rocky loam, moderately deep, 31-50% slopes

Similar to Auburn rocky loam, moderately deep, 16-30% slopes, except is steeper and generally more rocky, stony, cobbly and/or gravelly. Much of this is associated with Aiken soils.

[illegible]

Auburn soil material, 2-50% slopes

These are soils similar in some respects to Auburn soils but are usually very shallow with pockets of deeper areas, comprising up to 15% or less. In the complex a pattern is difficult to delineate accurately with scale of maps used. Soils may be rocky, stony, cobbly and/or gravelly with some areas being just a thin veneer of Auburn-like surface soil over bedrock. This unit is most often brush covered with scattered open areas of low annual grass cover.

[illegible] Series - 7

[illegible] stony loam, [illegible] deep, [illegible] slopes.

Similar to [illegible] loam, [illegible] slopes, except [illegible] and somewhat more stony [illegible] rock outcropping. Depth to bedrock varies from less than [illegible] deep to over [illegible] deep at any given spot but over [illegible] of unit is from [illegible] to [illegible] effective depth. Included in this unit are some small areas of severe erosion. [illegible] this unit has brush, chamise and manzanita cover which [illegible] of control burn, which in turn results in accelerated sheet, rill and gully erosion. Some of this unit may require supplemental seeding after [illegible] range improvement programs. This unit includes [illegible] of rock outcropping, [illegible] and [illegible] as well as [illegible].

[illegible] stony loam, [illegible] slopes.

Similar to [illegible] stony loam, [illegible] slopes, except it is steeper and [illegible]. Generally brush covered.

[illegible]

[illegible]

[illegible]

[illegible] 1-2

The [illegible] soils [illegible] a minor acreage in the northern part of the [illegible] survey area.

[illegible]-13
[illegible] [illegible] rocky loam, severely eroded, 31-75% slopes

A typical location site would be [illegible] Hill Road [illegible] corner about 2,000' uphill from [illegible]'s place. (SW corner of SW¼ of SE¼ Sec. 36 [illegible])

A1/A3 0-3" Brown (7.5YR 5/4) gritty loam, dark brown to reddish brown or dark reddish brown (7.5YR 3/2 to 5YR 3/4) moist, dark brown (7.5YR 3/2 to 4/3) rubbed, moist; weak to moderate medium to coarse subangular blocky; slight hard, friable, non-sticky and non-plastic; medium acid (pH 6.0); few thin discontinuous clay films on ped faces, bridging sand grains; abundant fine and medium roots; clear wavy boundary.

B2t 3-15" Reddish brown to yellowish red (5YR 5/4 to 5/6) clay loam, reddish brown to yellowish red (5YR 4/4 to 4/6) when moist; very hard, firm, slightly sticky and plastic; common moderately thick clay films [illegible] [illegible] [illegible], in pores and on [illegible]; [illegible] fine, medium and coarse roots; strongly acid (pH 5.5); clear irregular boundary.

[illegible] Reticulated-red ([illegible]) [illegible], [illegible] [illegible]; [illegible] breaking to moderate [illegible] [illegible]; [illegible] [illegible] [illegible], friable when moist, [illegible] and slightly plastic; [illegible] [illegible] [illegible] [illegible]; [illegible] [illegible] [illegible] [illegible] [illegible]; strongly acid (pH [illegible]); gradual irregular boundary.

[illegible] Decomposed bedrock, [illegible] [illegible] to [illegible] [illegible]; [illegible]; [illegible] [illegible] [illegible] and [illegible] [illegible]; strongly acid (pH 5.5).

Variations: Effective depth is quite variable being from about 20" to over 60" deep to restricting material but usually it is between 30 and 40" deep. A [illegible] may or may not be present depending on site. [illegible] in [illegible] and [illegible] according to [illegible] and slope. [illegible] and [illegible] occur [illegible] [illegible] as well as small patches of brush. [illegible] [illegible], [illegible] pine cover. The profile has [illegible] [illegible] [illegible], [illegible] pebbles and cobbles. [illegible] fragments [illegible] [illegible] [illegible] [illegible] [illegible] is fairly [illegible] [illegible] areas.

THE BANDARITA series is composed of normal Reddish Brown Lateritic soils developed from metasedimentary parent rocks under mixed brush, chamise and manzanita and conifer cover at elevations from 2,500 feet o 5,000 feet. These excessively drained soils have rapid runoff. The A horizon is usually a gravelly silt loam, strongly to medium acid in reaction, pale to light brown in color. The B1 horizons are light brown to yellowish red, strongly acid in reaction, loams. The B2 horizons are yellowish brown to yellowish red, very strongly or strongly acid in reaction, light clay loams to light clays. The C horizons are reddish yellow, hard massive very strongly acid loams. Bandarita soils are generally associated with Mariposa, Josephine, and shallow Maymen soils or Maymen soil materials. The Bandarita soils resemble Mariposa soils which are minimal Yellowish Brown Lateritic soils whose sola usually overlie metasedimentary bedrock at depths less than 3 feet; Josephine soils which have thicker A horizons, less abrupt AB boundaries, and B2 horizons which are more suitable for water and root penetration.

Total inclusions of other soils in Bandarita soils mapping units will not exceed 15 percent. Included soils will be up to 10 percent Mariposa soils, up to 10 percent Maymen soils and/or Maymen soil materials and up to 5 percent Josephine soils.

14LVE
VI-1
AND
14LVE
VII-1

Bandarita gravelly silt loam 16-51% slopes

Bandarita soils are a minor group of soils of the northern part of the Mariposa Soil Survey. A typical location would

be 1.25 miles NNE of McDiarmid Guard Station NW¼ Sec 27, T2S R17E MDB&M on a SE facing slope from Red Cloud Mine Road.

O 1-2" Leaf litter.

A1 0-9" Pale brown (10YR 6/3) gravelly silt loam, brown to dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; abundant very fine and medium roots; many very fine and medium pores; strongly acid (pH 5.5); clear wavy boundary.

B1t 9-15" Light brown (7.5YR 6/4) silt loam, reddish brown (5YR 4/4) moist; moderate coarse subangular blocky structure; hare, firm, sticky and plastic; few very fine and medium roots; common very fine and medium pores; many moderately thick clay films on ped faces; very strongly acid (pH 5.0); clear wavy boundary.

B21t 15-27" Yellowish red (5YR 4/6) silty clay, dark reddish brown (5YR 3/4) moist; strong medium and coarse subangular blocky structure; very hard, firm, sticky and plastic; very few fine and very fine roots; very few very fine pores; many thick clay films in pores and on ped faces; very strongly acid (pH 5.0); diffuse wavy boundary.

B22t 21-36" Yellowish red (5YR 5/6) heavy silty clay loam; dark red (2.5YR 3/6) moist; strong medium and coarse angular blocky structure; very hard, very firm, sticky and plastic; very few very fine roots; very few very fine pores; many thick clay films in pores and on ped faces, very strongly acid (pH 5.0); diffuse wavy boundary.

C 36-60" Reddish yellow (7.5YR 6/6) silt loam, strong brown (7.5YR 5/6) moist; massive; hard, non-sticky and slightly plastic; very few very fine roots; very few very fine pores; common thin clay films in pores; very strongly acid (pH 5.0).

Variations: The A1 horizon when dry has colors in hue 10YR with values of 5 to 7 and chromas 2 to 5 light gray to very pale brown to gray brown to light yellowish brown; moist colors vary from 10YR to 7.5YR hues with values of 3 to 6 and chromas 2 to 4 light gray to dark grayish brown or pale brown or light yellowish brown to brown, dark brown or dark yellowish brown. The textures vary from very fine sandy loams to heavy loams which may or may not be modified by gravels. Reaction range is from pH 6.0 to 5.0. The B2 horizons are similar to the A horizon except slightly finer textured. The B2 horizon color

ranges from hue 7.5YR and/or 5YR dry with values of 5 to 6 and chromas 6 to 8 which are reddish yellows, strong brown or yellowish reds. Moist colors range from hue 5YR and/or 2.5YR with values of 2 to 5 and chromas 4 to 8 which are reds, dark reddish brown or reddish brown or yellowish red. Textures range from clay loams to clay and are somewhat silty. Reaction range is from pH 4.5 to 5.5. Effective depth ranges from 10 to 20" with inclusions ranging to about 40".

A11 0-3" Dark gray brown (10YR 4/2) loam very dark gray brown (10YR 3/2) moist; week fine subangular blocky structure; slightly hard, very friable, non-sticky; plentiful roots; slightly acid (pH 6.5); clear smooth boundary.

A12 3-8" Dark gray brown to dark brown loam (10YR 4/2-4/3) very dark gray brown to dark brown (10YR 3/2-3/3) moist; strong coarse angular blocky structure; very hard, friable, non-sticky; plentiful roots; slightly acid (pH 6.3); gradual wavy boundary.

A13 8-12" Dark gray brown to dark brown (10YR 4/2) loam, very dark gray brown to dark brown (10YR 3/2-3/3) moist; moderate medium angylar blocky structure; hard, firm; non-sticky; slightly acid (pH 6.3); abrupt irregular bouncary.

R 12"+ Slightly decomposed vertical fine grained metamorphic rocks.

Variations: Normally the horizons are A1 over R, but some places have an A C R sequence. Surface color of the A11 varies from light olive gray (5Y 6/2) to gray to pale brown (10YR 6/1-6/3) to grayish brown (2.5Y 5/2) to dark grayish brown (10YR 4/2) to dark brown (10YR 4/3). When moist the A11 horizon colors vary from gray to dark grey

(5Y 6/1) to grayish brown, grayish brown (2.5Y 5/2 to 4/2), to dark brown (10YR 4/3). Colors of the A12 horizons vary from light gray to gray (5Y 5/1) to grayish brown (2.5Y 5/2-4/2), to brown to pale brown (10YR 5/3-6/3) and when moist vary from gray to very dark gray (5Y 5/1-3/1) to olive gray (5Y 4/2) to dark grayish brown to very dark grayish brown to dark brown (10YR 4/2-3/2-4/3) to dark yellowish brown (10YR 4/4).

The colors of the A13 and C horizons vary from olive gray (5Y 5/2) to dark grayish brown to brown (10YR 4/2-4/3-5/3). When moist the colors of the A13 and C horizons vary from olive gray (5Y 4/2) to dark grayish brown to brown (10YR 3/2-4/3-5/3).

Normally the [illegible] soils are slightly acid but small areas may be slightly basic or medium acid. Textures vary from fine sandy loams to silt loams but are mostly loams.

[illegible]

[illegible] rocky loam, 31-70% slopes

Similar to [illegible] rocky loam, 15-31% slopes, except steeper.

[illegible]

[illegible]

[illegible]

[illegible] [illegible] loam, [illegible] slopes

A typical profile is as follows (under [illegible]) [illegible] side of the [illegible] in [illegible]. [illegible] point of [illegible] to [illegible].

O1 1/8-1/2" Slightly decomposed grass.

O2 1/2-0" Grayish brown (10YR 5/2) organic litter; moderately fine granular structure; slightly hard dry, friable moist, non-sticky and non-plastic wet; abundant fine roots; medium acid (pH 6.0); abrupt smooth lower boundary.

A 0-10" Brown (10YR 5/3) loam, dark brown (10YR-7.5YR 4/3) moist; moderately fine crumb structure; hard, friable, non-sticky and non-plastic; abundant fine grass and forb roots; medium acid (pH 6.0); clear wavy lower boundary.

B 10-30" Brown (7.5YR 5/4) loam, reddish brown (5YR 4/4) moist; weak fine subangular blocky structure; hard, friable, non-sticky, non-plastic; few fine roots; medium acid (pH 6.0); abrupt wavy lower boundary.

R 30"+ Fine grained metasediments - slates and schists.

Variations: The organic O1/O2 horizons may or may not be present depending on location of site. The A horizon or horizons are pale brown to brown (10YR 6/3-6/4-5/3-5/4) to 7.5YR 5/4-4/3) to a few inclusions of

[illegible]

[illegible] loams, 31-75% slopes

Same as [illegible] loam, moderately deep, 2-10% stones, except steeper and may possibly include larger areas of soil less than 10" deep (probably about 1 to 3 percent such).

Dry area south and east of [illegible] Cr. on [illegible] River of about 600 acres contains approximately 30 percent Whiterock soils in complex, which is about 25 to 35 percent slope and 7-10" deep. Some units may be from 50 to 60 percent slopes but include large areas less than 50 percent. Reasonably slopes are 35 to 50 percent in this unit.

[illegible] SERIES - 1

The [illegible] series are composed of [illegible] soils ([illegible]) [illegible] [illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] at elevations of 1,500 to 2,500 feet. These [illegible] [illegible] soils have [illegible] [illegible] [illegible] [illegible] [illegible] [illegible], strongly to medium acid loams. The [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] distinct [illegible] [illegible] [illegible] and often contain numerous small fragments of gravel size. [illegible] [illegible] [illegible] [illegible] [illegible].

The [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] of the [illegible] and [illegible] [illegible] [illegible] [illegible]. Almost all areas of [illegible] soils [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. [illegible] [illegible] [illegible] percent [illegible] [illegible] [illegible] [illegible] percent [illegible] [illegible]. The [illegible] [illegible] [illegible] a very small [illegible] [illegible] [illegible] [illegible] part of the [illegible] soil survey.

[illegible], [illegible], [illegible], [illegible] [illegible] loam, 1-8% slopes

Location: [illegible] [illegible] mile, [illegible] N. of [illegible] Bridge on [illegible] [illegible] [illegible] [illegible] [illegible] area.

A1 0-4" [illegible] [illegible] (10 YR 2/2) dry loam, very dark grayish brown (10YR 3/2) moist; fine granular structure; loose, friable, [illegible], strongly acid (pH 5.0) abrupt lower boundary.

B12 1½-15" Grayish brown (2.5Y 5/2) silt loam, very dark (10YR 3/2) moist; massive; loose, friable, nonsticky, numerous slaty gravel sized fragments; strongly acid (pH 5.1) clear wavy lower boundary.

C1 15-30"+ Grayish brown (2.5Y 5/2) dry silt loam, olive brown to dark yellowish brown (2.5Y 4/4 - 10YR 4/2); massive; loose, friable, nonsticky; medium acid (pH 6.0) numerous slaty fragments or gravel size; disappearing below 15 inches.

Variations: Texture varies from a very fine sandy loam to a heavy loam; drainage usually varies from well drained to somewhat imperfectly drained. Small areas with weak development and of clay loam or silty clay loam texture were found. It should be noted that at one time all of this land had a water table above the 30" depth level. This table has been alleviated by newly incised channels in recent years. In some places there are stratified slaty gravelly loam horizons varying in depth from about 1½ ft. to over 5 ft. and from 6 in. to 3 ft. in thickness. Slaty gravels in any horizon may vary from occasional to many, but should have little effect on tillage implements. Channel erosion and stream bank erosion is usually moderate to severe through areas in which this soil is found. Normally the slopes are about 2 percent grade but small inclusions may include slopes up to 5 percent grade or may be flat.

HENNEKE SERIES - 81

THE HENNEKE soils are composed of Medial Non-Calcic Brown soils developed on Serpentinized rocks in the area from the east side of Bear Valley to Coulterville, adjacent to and in places on both sides of Hwy #49 under grass, brush and/or occasional digger pine cover at elevations from 800 to about 2,800'. These well to excessively drained soils have medium to rapid runoff. The A horizons are dark reddish gray to reddish brown loams to light clay loams neutral in reaction. The B1 horizons are reddish brown clay loams neutral in reaction. The B2 horizons are reddish brown clay loams with blocky structure and neutral in reaction. These horizons are underlain by abrupt irregular R horizons.

Henneke soils are generally associated with Auburn and Argonaut soils and Laughlin and Maymen soils which are developed from metasedimentary parent rocks. Henneke soils which are formed on ultra-basic rocks resemble the more fertile Auburn and Argonaut soils formed on basic and metabasic igneous rocks.

Henneke soils as mapped include about 3 percent Maymen soil material, 1 percent Argonaut soils, 1 percent Laughlin soils and 8 percent Auburn soils. Henneke soils comprise a minor part of the northern part of the Mariposa Soil Survey area.

HrEC-81
VI-1

Henneke rocky loam, 2-75% slopes

A typical location site would be 200' W of SE corner Sec 24 R16E, T3S, MDB&M, elevation 2,150 feet (Hwy #49) N of Bagby.

A1	0-1"	Dark reddish gray to reddish brown (5YR 4/2-5/3) light clay loam, dark reddish brown (5YR 3/3) moist; strong medium granular to crumb structure; slightly hard, friable, slight sticky and non-plastic; plentiful roots; neutral (pH 7.0); dark reddish gray color caused by decomposed organic matter between peds; abrupt smooth boundary.
B1	1-7"	Reddish brown (5YR 4/3) clay loam, dark reddish brown (5YR 3/3) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and non-plastic; plentiful roots; neutral (pH 7.0) clear wavy boundary.
B21	7-21"	Dusky red (2.5YR 3/2) clay loam; moist, strongly medium angular blocky structure; very hard, firm, slightly sticky and slightly plastic; many thick and continuous clay films on ped faces and in pore spaces; neutral (pH 7.0) angular cobbly and stones over 90% volume of horizon; some round (BB size) concretions noted; abrupt irregular boundary.
R	21"+	Slightly cracked bedrock with B2 horizon from above filling vertical cracks but this soil material almost completely disappearing below 30" depth.

Variations: Effective depth varies from almost none to over 2 feet but averages between 10 and 20". Textures of A horizons are loams and clay loams. B horizons normally increase in rock particle content with depth but insome cases it is comparatively free of rock particles above R horizon. Small areas have a C horizon of sandy loam texture with pH of 8.0 to 8.5. Dominant slope range is 25 to 50 percent.

Inclusions: Some rocklands are also included but are small bodies. Larger bodies are separated.

HOLLAND SERIES - 20

The Holland Series is composed of minimal Reddish Brown Lateritic soils developed from acid igneous granitic parent rock under grass, oaks, conifers and/or brush (including chamise and manzanita) cover at elevations over 2,500 feet. These well drained soils have medium runoff. The A horizons are light brownish gray to grayish brown sandy loams, slightly medium acid and granular tending toward massive with depth. The B horizons are light brown to reddish yellow dry, brown, reddish yellow or strong brown to reddish brown or yellowish red moist, heavy loams to clay loams, medium to strongly acid. The C horizons are brown to pink loams, massive, and medium or strongly acid. The R horizon is at depths usually more than 48" and consists mostly of quartz diorites, and granodiorites which are somewhat decomposed except for occasional to frequent out crops which may not be.

Holland soils are in complex with Musick soils which have finer textured and redder subsoils, and are associated with Aiken soils formed on basic igneous rocks, Josephine, Bandarita and Mariposa soils and Maymen soil materials formed from fine grained metasedimentary rocks, and Non-calcic Brown Bancas, and Auburn soils.

Holland soils as mapped in the northern part of Mariposa soil survey are in complex with Musick soils and are a very minor acreage.

2rL4A-20/2rL43A-21
EF-1

Holland-Musick Rocky Sandy Loams, 16 - 51% Slopes.

A profile typical of Holland series is located 0.59 miles toward Bootsack from Darrah on Darrah Rd Sec.12,T5S,R19E - M.D.B.& M.

O		Trace decomposed grass and leaf litter.
A11	0" - 6"	Light brownish gray (10YR 6/2) heavy fine sandy loam, dark brown (7.5YR 3/2) moist; moderate very fine and fine granular structure; loose to soft, friable, non-sticky and very slightly plastic; plentiful fine and few medium random roots; very few micro and fine random pores (because of small size of granules); slightly acid (pH 6.3); many fine loose quartz sand grains; clear wavy boundary.
A12	6" - 12"	Grayish brown (10YR 5/2) heavy fine sandy loam, dark brown (7.5YR 3/2) moist; very weak fine granular structure to massive; soft, very friable, non-sticky and very slightly plastic; plentiful fine and few medium random roots; abundant, fine random pores; medium acid, (pH 6.0); micaceous; abrupt wavy boundary.
A13	12" - 18"	Pale brown to gray brown (10YR 6/3-5/3) heavy fine sandy loam, dark brown (7.5YR 3/2) moist; massive; soft, friable, non-sticky and very slightly plastic, plentiful medium and fine roots; very few fine random pores; strongly acid, (pH 5.5); highly micaceous; abrupt wavy boundary.
B21	18" - 32"	Reddish yellow (7.5YR 6/6) clay loam; yellowish red (5YR 4/6) moist; very weak to weak coarse subangular blocky structure; very hard, friable, slightly sticky plastic; very few fine random roots, common fine random

pores, common moderately thick and thin clay film which bridges sand grains, common moderately thick and thin clay film on ped faces; medium acid (pH 6.0); micaceous; rubbed colors light brown (7.5YR 6/4) dry and reddish brown (5YR 4/4) moist; gradual irregular boundary.

B22 32" - 41" Reddish yellow (7.5YR 7/6) light clay loam to clay loam, reddish yellow (7.5YR 6/6) moist; weak coarse blocky structure; very hard to extremely hard, friable, plastic and sticky; very few fine roots, very few medium and few fine random pores. Common moderately thick and thin clay films which bridge sand grains, common moderately thick and thin clay film on ped faces; strongly acid (pH 5.5); highly micaceous; gradual irregular boundary.

C1 41" - 50" Light brown (7.5YR 6/4) heavy loam, brown (7.5YR 5/4) moist; massive; very hard, friable, non-sticky, plastic; common micro and fine random pores; very few to few thin clay films which form bridges between sand grains; strongly acid (pH 5.5); highly micaceous; abrupt irregular boundary.

C2 50"+ Decomposed granodiorite with soil material closely spaced fractures, rock breaks into coarse granitic sand by crushing.

VARIATIONS

Depth to parent material varies from over three feet to over six feet averaging between four to six feet in depth. The A horizons vary from

coarse sandy loam to very fine sandy loams in texture and are usually in grayish brown or brownish gray color range (10YR 6/2-4/2). When present the A3 are very slightly finer textured and are grayish brown to brown color range (10YR 6/4-4/2-6/3 and 7.5YR 5/4). The B1 horizons are usually slightly redder than 7.5YR hue and slightly yellower than 5YR hue, but may be at either end being nearly reddish brown or brown, reddish yellow or yellowish red (7.5 to 5YR 5/4-4/6-6/6).

The B2 horizons are normally in the 5YR hue, but some parts of the horizon may be as yellow as 7.5YR being brown, reddish brown, reddish yellow, yellowish red (7.5YR to 5YR 5/4-6/8 to 5/6). Texture range of the B horizons are from heavy loams to clay loams.

The B3 tend to be in the 7.5YR hue, but are as red as 5YR hue and yellow as 10YR hue being from reddish brown to yellowish brown (5YR - 10YR 5/4-6/4). The C horizons are normally light yellowish brown (2.5Y to 10YR 5/4 - 6/4) dry, but range to reddish yellow (5YR 4/6 - 4/8) moist. Texture range is about the same as for the A horizons. Erosion is slight to moderate.

MUSICK SERIES

The detailed description of Musick soils of this unit is written in the Musick Series-21 description.

The Musick soils which comprise about one half of this unit are similar in profile respects to Musick loam 2 - 9 percent slopes except most of the surface soils are fine or very fine sandy loams rather than loams. The surface may show as high as 50 percent rock outcropping. Some areas may be somewhat stony, cobbly and/or gravelly.

HORNITOS : JLP - 20

The HORNITOS series is composed of Lithosols developed on sandstone formations under grass and scattered oak and brush cover at elevations from 1,000 to 2,500 feet. These soils are medium acid, excessively drained with medium runoff. The surface soils are characteristically coarse sandy loams to sandy loams, reddish yellow in color and usually less than 10 inches deep. The C horizons when present are reddish yellow to light reddish brown sandy loams. The soil profile is on sandstone in various stages of decomposition. There is about 40 acres of Hornitos, in one block, associated with Henneke soils on Serpentine and Laughlin soil and Wyman soil materials on metasedimentary fine grained rocks. There is about 2% Henneke soils, 4% Wyman soil materials on metasedimentary fine grained rocks. There is about 2% Henneke soils, 4% Wyman soil material and 4% Laughlin soils included in the unit.

JLP-20
66-3 Hornitos coarse sandy loam, 2-31% slopes

Typical profile at approximately center of SW¼ of NW¼, Sec. 20, T. 4 S., R. 15 E.

A11 0-1" Reddish yellow (5YR 6/6) corse sandy loam, reddish brown (5YR 4/4) moist; massive; loose, very friable, nonsticky; plentiful fine roots; medium acid (pH 5.8); abrupt boundary.

A12 1-4" Reddish yellow (5YR 6/6) sandy loam, reddish brown (5YR 4/4) moist; massive; loose, very friable, nonsticky, nonplastic; strongly acid (pH 5.3); abrupt smooth boundary.

C1 4-9" Reddish yellow (5YR 6/6) sandy loam, red (2.5YR 4/6) moist; massive; slightly hard, very friable, nonsticky, nonplastic; very strongly acid (pH 5.0) gradual irregular boundary.

C2 9-13" Light reddish brown (5YR 6/6) sandy loam, red (2.5YR 4/6) moist; massive; slightly hard, very friable, nonsticky, nonplastic; very strongly acid (pH 5.0); abrupt irregular boundary.

R 13"+ Sandstone in various stages of decomposition.

Variations: Surface color varies from pink (7.5YR 7/4) to reddish yellow (7.5YR 6/6) dry, and dark brown (7.5YR 4/4) to dark reddish brown (5YR 3/4) moist. Textures vary from coarse sandy loam to sandy loam. Surface pH vary from 5.0 to 6.0 and subsoil pH may be as low as 4.5.

The mapping unit includes soils as shallow as 5" and as deep as 30", average depth about 10-15", both extremes being a minor part of the area. Some areas may be as steep as 51% but these are only a small part of the mapping unit. Often a rocky sandstone shelf underlies Hornitos soils giving a rounded table top appearance to the topography.

JOSEPHINE SERIES - 70

The Josephine series is composed of Medial Reddish Brown Lateritic soils developed mostly from schists and slates of the Mississippian Marine metasedimentary formation under conifers, brush, oaks, and/or grass at elevations from about 2,750 to over 5,000 feet. These well to excessively drained soils have medium to rapid runoff. The A horizons are characteristically light brown or light yellowish brownoor brown loams or light clay loams with blocky structure and are somewhat modified by slatey gravels. The B1 horizons are similar to the A horizons except they tend toward a little redder hue and a little fine texture. The B2 horizons are mostly clay loams, reddish brown or yellowish red in color, and tend to be medium acid in reaction. The sola rests upon variably decomposed bedrock with a gradual irrigular boundary. The Josephine soils are generally associated with Sites soils, Mariposa soils, Maymen soils, Aiken soils, and Auburn soils found on adjacent basic rock formation, and Bandarita soils. Josephine resembles Mariposa soils which are shallower and tend more toward the yellow hues, the Sites soils which are redder and somewhat finer textured, and Bandarita soils which have a more compacted and more developed B2 horizons.

Josephine soils as mapped include small bodies of other soils too small in area or too complex in pattern to accurately delineate on maps used. Total inclusions of other soils will not exceed 15 percent of any mapping unit. This soil may include up to 10 percent Mariposa soils, 5 percent Bandarita soils, 4 percent Aiken soils, 2 percent Auburn soils, 4 percent Maymen soil material, 2 percent Sites soils. Josephine soils consist of only a minor acreage in the northern part of Mariposa soil survey area.

20[illegible]-12 [illegible] loam, [illegible] - 30% slopes

Location of typical site: 1,300' N [illegible] E of SW corner Sec [illegible], [illegible], [illegible].

O 1/2-0" Fresh and decomposed litter and [illegible].

A1 0-2" Light brown (7.5YR 6/4) light clay loam, somewhat modified by very fine and fine shotty pellets, reddish brown (5YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; abundant fine and micro [illegible] roots; common micro and fine interstitial pores, few medium tubular pores; medium acid (pH 6.0); ped faces have a glazed appearance; considerable amount of [illegible] flecks of organic matter [illegible] [illegible]; abrupt smooth boundary.

A3 2-12" Light brown (7.5YR 6/4) light clay loam, somewhat modified by fine and very fine shotty pellets, reddish brown (5YR 4/4) moist; weak fine angular blocky structure; [illegible], soft, friable, slightly sticky and slightly plastic; abundant fine and micro [illegible] roots; many micro and fine [illegible] pores, common medium tubular pores; very few thin clay film patches [illegible] [illegible] and also on ped faces and in pore linings strongly acid (pH 5.5); clear wavy boundary.

IIB2 12-40" Light brown (7.5YR 6/4) clay loam modified by increasing [illegible] gravels, cobbles, stones and [illegible] rock fragments.

with depth of yellowish red (5YR 4/6) moist; very hard, firm, sticky and plastic; very few coarse random roots, common fine to medium random roots; many micro and fine random pores, common medium tubular pores; common thin clay film holding sand grains by weak bridges; lining pores and on ped faces; strongly acid (pH 5.5); gradual irregular lower boundary.

R 40" + Slates and schists, slightly decomposed.

Variations: Surface colors vary from light yellowish brown or very pale brown or yellowish brown or light brown to brown in the 7.5 YR and 10YR hues. Textures of the A horizon varies from loams to light clay loams which may or may not be modified by slaty rock fragments. Outcropping of rocks is variable and a lot of the rocks are inped to near the surface, and includes stones, cobbles and gravels. Surface litter varies from nil under grass cover to several inches thick conifer cover. Depth averages between 24 to 40 inches with small areas deeper or slightly shallower. The B1 Horizons are sightly finer textured than the A horizons and are light brown to brown or reddish brown in color. The B2 horizons are reddish brown or yellowish red in color tending toward brown or light brown as it goes deeper. The B2 horizons tend to increase in rock fragment content with depth until it gradually becomes wholly parent rock. Occasionally the B2 horizon gives way to a C horizon of

loam texture, brown color or reddish yellow color, which gradually rests on parent rock in various stages of decomposition.

3M4E-70
BD-1

Josephine loam, 2-16% slopes

Similar to Josephine rocky loam, 9-51% slopes except rock fragment content is low enough not to affect any tillage practice.

3M4E-70
E-1

Josephine loam, 16-31% slopes

Similar to Josephine loam, 2-15% slopes except steeper.

3M4E-70
F-1

Josephine loam, 31-51% slopes

Similar to Josephine loam, 16-31% slopes except steeper.

2M4E-70
BC-1

Josephine loam, 2-9% slopes

This unit is similar to described unit Josephine rocky slopes, except profile exceeds 40 inches effective average depth, is not as steep and rock fragment content is low enough not to affect any desired tillage practice.

2M4E-70
D-1

Josephine loam, deep, 9-16% slopes

Similar to Josephine loam, deep, 2-9% slopes except steeper.

2M4E-70
E-1
and
2M4E-70
F-1

Josephine loam, deep, 16-31% slopes

Similar to Josephine loam, deep, 9-16% slopes except steeper. Includes some small areas exceeding 31% slopes.

3rM4E-70
G-1

Josephine rocky loam, 51-75% slopes

Similar Josephine rocky loam, 9-51% slopes except steeper.

LAUGHLIN SERIES - 76

THE LAUGHLIN series is composed of Lithosolic, Non-Calcic Brown intergrade developed from metasedimentary parent rocks under grass, oak, some digger pine and/or some brush cover at elevations from 1,000 to 2,500'. These somewhat excessively and excessively well drained soils have medium to rapid runoff. The A horizons are very pale brown to yellowish brown loams to light clay loams, slightly acid in reaction, and variable amounts of rock outcropping. The B horizon usually occurs where soil depth exceeds about 14 inches and is very pale brown to strong brown in color and varies from heavy loam to clay loam in texture. The sola overlie parent metasedimentary bedrock.

Laughlin soils are associated with Henneke soils on Serpentine in the Flyaway Gulch area about 5 miles north of Bagby and generally with reddish brown Auburn, Agronaut, and Maymen soils. The Laughlin soils resemble Maymen soils most of which are very shallow, and which tend to be more grayish color.

Laughlin soils as mapped include small bodies of other soils too complex in pattern or too small in size to accurately delineate at scale used. Total inclusions of other soils will not exceed 15 percent of soil bodies. These include up to 10 percent Maymen soils, 4 percent Argonaut soils, 3 percent Auburn soils or 2 percent Henneke soils. The Laughlin soils comprise a minor protion of the northern part, Mariposa Soil Survey.

LaUDE-76
E-1

Laughlin rocky loam, 16-31% slopes

A typical location site would be 3/8 mile E of Hwy #49 on Schilling Road. (SE¼ of NW¼ sec. 19, T3S, R17E, MDB&M)

A11 0-3" Light yellowish brown (10YR 6/4) loam, dark yellowish brown to yellowish brown (10YR 5/4 to 4/4) moist; moderately fine granular to medium crumb structure; slightly hard when dry, friable moist, non-sticky and non-plastic wet; plentiful fine and micro random roots; pH 6.0; abrupt wavy lower boundary.

A12 3-14" Very pale brown (10YR 7/3) heavy loam, yellowish brown (10YR 5/4) moist; massive; very hard dry, friable moist, slightly sticky and slightly plastic wet; plentiful fine and micro roots; pH 6.0; abrupt wavy lower boundary.

R 14"+ Metamorphosed rock only slightly decomposed.

Variations: Sometimes a thin organic loam surface horizon is found. The A horizons are normally loams or heavy loams, range in color from 10YR 7/4, 7/3 to 6/4, 6/3 but are occasionally a 7.5YR 5/4 to 5/6 color, with a pH range of 5.5 to 6.5, and variably gravelly, stony and/or rocky. The surface horizon though is normally free of rock fragments but the subsurface

and subsoil vary from about 3 to 50% percent. Effective depth is variable with about 60% less than 14 inches, less than 20 inches deep and 90% over 10 inches deep. Where soils exceed 14 inches deep a weakly developed B horizon of light clay loam to clay loam is found. Color is similar to surface and it is usually weak blocky structure. Included are small areas which have a relatively thin clay layer at the bottom of the profile above the bedrock.

Inclusions: Inclusions as mapped are indicated in paragraph preceding profile description and under variations. In addition a deeper phase of comparatively small acreage has been included in the Laughlin soils which goes as deep as 36 inches to a restrictive layer.

LmF1-76
[illegible]

Laughlin rocky loam, 31-75% slopes

Very similar to described profile except steeper and generally somewhat more rocky, stony, cobbly and/or gravelly.

LmE2-76
[illegible]

Same as Laughlin rocky loam, 16-31% slopes

MARIPOSA SERIES - 71

THE MARIPOSA series is composed of shallow, Reddish Brown Lateritic soils developed from metasedimentary rocks mostly slate, schist, [illegible] and/or green rock at elevations from about 1,500 to 5,000 feet. These excessively drained soils have rapid runoff. The A horizons are light brown or brown in 7.5 and 10YR hues of loam or silt loam texture, medium acid to strongly acid in reaction. B1 horizons are brown to reddish yellow (7.5YR hues) loams of slightly finer texture than A horizons, and medium acid to very strongly acid in reaction. The B2 horizons are heavy loams to clay loams, medium to strongly acid in reaction, and have subangular blocky structure.

Mariposa soils are associated with Josephine soils, [illegible] Aiken soils on [illegible] rocks, [illegible] soils, Maymen soils and Maymen soil materials. Mariposa soils are similar to Auburn soils which are minimal Non-Calcic Brown soils developed from basic igneous and metaigneous parent rock; to Maymen soils which are [illegible] Lithosols; to Josephine soils which are a deeper Reddish Brown Lateritic soil, and to [illegible] soils which are a deeper [illegible] Reddish Brown Lateritic soil.

Mariposa soils as mapped include minor bodies of other soils too complex in pattern or too small in size to delineate separately at scale mapped. These inclusions of other soils will not exceed 15 percent in units less than [illegible] percent slope and 20 percent in units steeper. Inclusions are up to 5 percent Maymen soils, 10 percent Maymen soil material; 10 percent Josephine soils, 2 percent Auburn soils, 1 percent Aiken soils and 5

[illegible] [illegible] soils. The [illegible] soils consist of a minor portion of soils mapped in northern part of [illegible] Soil Survey area.

[illegible]

[illegible] loam, 15-25% slopes

A typical site location would be 300' N, 900' E of SE corner Sec 21 T6S R18W [illegible].

A 0-2" Light brown (7.5YR 6/4), silty loam, brown to dark brown moist; massive; slightly hard, friable, non-sticky and non-plastic; plentiful roots [illegible]: very strongly acid (pH 5.0); clear wavy boundary.

B1 2-9" Reddish yellow (7.5YR 6/6-7/6) heavy silty loam, strong brown (7.5YR 5/6-5/8) moist; weak medium angular blocky structure; hard, friable, non-plastic and slightly sticky; few thin discontinuous clay films on ped faces; few fine vesicle pores; very strongly acid (pH 4.5); clear wavy boundary.

B2 9-20" Reddish yellow (7.5YR 6/6-7/6) silty clay loam, strong brown (7.5YR 5/8) moist; weak medium angular blocky structure; very hard, friable, and slightly sticky and slightly plastic; few fine vesicle pores; many moderately discontinuous moderately thick clay films on ped faces and lining pores, very strongly acid (pH 4.5); gradual irregular boundary.

R 20+ Bedrock with very little soil material, reddish yellow to yellowish brown (7.5YR-10YR 5/6) weathered and crushed; massive; extremely hard, firm, non-sticky and non-plastic; very strongly acid (pH 4.5).

Variations: Depth to restrictive layers is mostly from 14 to 24" deep with small areas going as deep as 30" and as shallow as 10". Organic surface horizons may or may not be present. A horizons are yellowish or light yellowish brown to reddish yellow loams, medium to very strongly acid in reaction and tend to be variably slaty gravelly but mostly under 20 percent content. B horizons are heavy loams to clay loams in texture slightly modified by rock fragments in the lower part and may or may not be somewhat slaty gravelly. Some rock outcropping is apparent in places. Color of the B horizons vary from 10YR browns to 5YR reddish browns or yellowish red, the latter colors in the moist condition. Reaction varies from medium acid to very strongly acid. C horizons when present are usually found in the upper boundaries of the R horizon which usually has vertical cleavages whose width rapidly decreases with depth by mere fracture.

MaGE-76
C-2

Mariposa loam, 51-75% slopes:

This unit is similar to Mariposa loam, 16-51% slopes, except rock fragment content tends to be higher and is much steeper. Some rock outcropping is likely to be noted in most of this unit.

75
92

MAYMEN SERIES - 75, 92

The MAYMEN series is composed of Lithosols developed from metasedimentary parent rocks under dominantly brush, some diggerpine and/or grass cover at 1,000 to 3,500 feet elevations. These excessively drained soils have rapid runoff. The A horizons are characteristically light brownish gray, or grayish brown to brown loams with somewhat varying gravel content and rock outcropping. C horizons are olive gray to grayish brown or brown loams mixed with weathered schist and slate fragments becoming rapidly almost wholly parent rock material with depth. Maymen soils occur in the same general area as the Lateritic Bandarita, Josephine, Aiken and Mariposa soils, and Non-Calcic Brown Dorado and Auburn soils. They also are associated with Henneke soils on Serpentine from Bear Valley north to Hwy #49 where it enters Tuolumne County.

Maymen soils resemble Daulton soils which are usually a little lower in elevation under less rainfall which produces mostly grass and grass-oak cover rather than dominantly brush cover as the Maymen soils.

Maymen soils as mapped may include up to 5 percent Mariposa soils, 4 percent Bandarita soils, 4 percent Josephine soils, 1 percent Henneke soils, 4 percent Auburn soils and/or Auburn soil material, However, none of the mapping units will have more than 15 percent other soils, either singly or in combination, as inclusions.

Maymen soils and Maymen soils material units consitute a substantial acreage of the northern part of the Mariposa Soil Survey.

MmE-75
PU-1

Maymen rocky loam, 31-75% slopes

A typical site is on N. side Texas Hill Fire Road turn around SE¼, Sec. 6, T3S, R18E, MDB&M.

A_{11} 0-3" Grayish brown (10YR 5/2D), very dark brown moist (10YR 2/2 M) gravelly loam; weak fine granular structure; soft dry, friable moist, non-sticky and non-plastic wet; common micro and fine roots; many micro interstitial and tubular fine pores; pH 6.2; abrupt smooth lower boundary.

A_{12} 3-11" Grayish brown (2.5Y 5/2D) very gravelly loam, dark grayish brown (2.5Y 4/2M) when moist; weak medium and fine granular structure; soft, friable, non-sticky and non-plastic; many micro and fine tubular and interstitial pores; plentiful micro and fine roots; pH 6.0, abrupt wavy lower boundary.

C 11-27" Olive gray (5Y 5/2M) moist weathered schist and slate fragments thinly coated with soil material; pH 5.8; gradual irregular lower boundary.

R 27"+ Schists and slates.

Variations: Color of A horizons vary in the gray browns or olive or yellowish browns to dark grayish browns or dark browns, moist and dry respectively. The C horizons may be slightly redder (7.5YR hues) in some places. Effective depth varies from 10 to 24 inches with small inclusions of deeper or shallower soils.

Slaty and schisty gravels and cobbles and some stones vary greatly in any given profile but increases generally with depth. In some small areas colluvium is encountered with characteristics similar to Maymen. Profile may be rocky, stony, cobbly and/or gravelly both in ped or exped with rock fragments being slaty and increasing in amount with depth.

Inclusions: Same as indicated in paragraph preceding profile description.

SrGE-92
VII-1

Maymen soil material, 31-75% slopes

These soils for the most part are less than 10" effective depth, may be rock outcropping, stony, cobbly and/or gravelly. This unit is similar in most respects to profile described except is shallower. Included are small areas deeper than 10" mostly at bottom of slopes. Color of the soils in this unit tend toward reddish brown in some places. Most of these lands are chapparal covered but some areas carry limited grass, brush, digger pine cover.

SrGE-92
VIII-2

Maymen soil material, over 75% slopes

Similar to above except steeper. Some small areas of colluvium have been included. This unit occurs almost exclusively on Merced River Canyon slopes and adjacent tributaries to it.

MUSICK SERIES - 21

The Musick series is composed of medial Reddish Brown Lateritic soils developed from acid igneous granitic rocks under grass, oaks, conifers and/or brush (including chamise and manzanita) at elevations above 2,500 feet. These well-drained soils have medium runoff. The A horizons are brown to strong brown loams, slightly or medium acid and granular or massive. The B1 horizons are brown loams, slightly or medium acid and massive. C horizons are yellowish red loams, medium to strongly acid, with a high amount of original mineral rock apparent.

Musich soils are mapped in complex with Holland soils which differ by having coarser textured, less reddish B2 horizons and are on the North and East slopes of Buckhorn Peak; and are generally associated with Non-Calcic Brown Auburn and Bancus soils, with Josephine, Bandarita, Mariposa soils, and Maymen soil materials formed on metasedimentary parent rocks. Music soils comprise only a very minor portion of Northern part of Mariposa Soil Survey Area.

1Mb31-21 / Bc-1 — Musick Loam, 2 - 9 percent slopes

A profile typical of the Musick series is found in SE¼ of NE¼ of NE¼ Sec.1 T5S R19E MDB&M

0 Trace Decomposed conifer leaves.

A1 0-1" Brown (7.5YR 5/2) loam, dark brown (7.5YR 4/2-3/2) moist; medium moderate granular structure; soft, friable, non-sticky and non-plastic; abundant fine and very fine random roots; very few very fine random pores; medium acid (pH 6.0) abrupt wavy boundary.

A3 1-3" Brown (7.5YR 5/4) loam, dark brown (7.5YR 3/2) tending toward dark reddish brown (5YR 3/3) moist; massive; slightly hard, friable, non-sticky and slightly plastic; abundant fine to very fine, very few medium random roots; many fine to very fine interstitial pores; very few thin clay film on pore linings and forming bridges between sand grains; medium acid (pH 6.0); clear wavy boundary.

B1 3-8" Strong brown (7.5YR 5/6) to reddish yellow (5YR 6/6) heavy loam, reddish brown to reddish yellow (5YR 4/4-4/6) moist; hard, friable, slightly sticky and slightly plastic; few fine to coarse random roots; many fine and very fine interstitial pores; common thin clay film on pore linings and forming bridges between sand grains; medium acid (pH 5.8); color dark reddish brown (5YR 3/4) moist crushed; clear wavy boundary.

B21 8-16" Red (2.5YR 5/6) clay loam, red (2.5YR 4/6) moist; strong medium and coarse angular blocky structure; very hard, firm, sticky and plastic; abundant micro and fine and plentiful medium random roots and few coarse vertically inclined roots; many moderately thick and thick clay film on pore linings and forming bridges between sand grains and on ped faces; strongly acid (pH 5.2) powdered dry color reddish yellow (5YR 6/8), gradual irregular boundary.

B22 16-60" Reddish yellow (5YR 6/8-6/6) clay loam, yellowish red (5YR 5/6-4/6) moist; massive; very hard, firm, sticky and plastic; few coarse and plentiful fine random roots; few fine random pores; common thin clay film forming bridges between sand grains; very strongly

acid (pH 5.0); crushed moist color red to yellowish red (2.5YR-5YR 4/6).

VARIATIONS:

Some areas maybe slightly gravelly, cobbly and/or stony with as high as 3 percent rock out crops. Depth is usulally over 60 inches, but small areas may be as shallow as 36 inches. Erosion varies from slight to moderate. Surface textures vary from fine sandy loams to loams and from slightly to strongly acid. When the textures are fine sandy loams, they are a grayish brown or brown in color and the A horizon maybe as thich as thirteen inches. However, the areas with loam surfaces for the most part have in the past been tilled. This would tend to make the horizon a little redder hue (7.5YR instead of 10YR), as it would bring up some of the redder B horizons and tend to increase the amount of clay in the surface profile. B2 horizons are clay loams to clay, are usually as red as 2.5YR hues when moist, but some areas may be no redder than 5YR hues, and are medium to very strongly acid.

INCLUSIONS:

Included is up to 15 percent Holland soils and 2 percent Auberry and/or Sierra Soils which border them in one place on Groveland Road near Tuolumne County Line.

1843A-21 / C-1 Musick loam, 9 to 16 percent slopes

Similar to Musick loam, 2 to 9 percent slopes except steeper.

SITES SERIES - 79

The Sites series is composed of Reddish Brown Lateritic soils developed from metasedimentary parent rocks under grass, conifers, oaks and/or brush cover at elevations above 3,000 feet. These excessively drained soils have rapid runoff. O horizons of decomposed or slightly decomposed leaves, woody particles, and/or conifer needles may be missing to several inches thick. The A horizon is brown to reddish brown sandy loams to loam, granular, medium or slightly acid. The B1 horizons are strong brown or reddish yellow or reddish brown loams to light clay loams, blocky and medium acid. The B2 horizons are red clay loams and clays, blocky and medium acid. B3 horisons are loams to clay loams, yellowish red to red in color, medium to strongly acid. The C horizons are brown to yellowish red fine sandy loams to loams, generally massive, and medium acid. Parent material consists of slates and schists at depths usually exceeding 48 inches.

Sites soils are associated with very shallow Maymen soil materials, less red and shallower Mariposa soils, and Josephine soils. Sites soils resemble Josephine soils which have thicker A horizons, tend to be less reddish throughout, and have less developed B horizons.

As mapped Sites soils includes small bodies of other soil too complex in pattern to accurately delineate. They include up to 10 percent Josephine soils, 3 percent Mariposa soils and 2 percent Maymen soil materials. Sites soils are a very minor acreage in the Northern part of Mariposa Soil Survey Area.

2N43E-79/F-1 Sites loam, 31 - 51 percent slopes

A typical profile of Sites soil is found 0.3 miles toward Coulterville from Seventh Day Adventist Church on Greeley Hill northside of road.

O 1½" - 0" Pine leaves from slightly to highly decomposed as mineral horizon is approached.

A1 0" - 3" Brown (10YR 5/3) heavy sandy loam, dark brown (7.5YR 3/2) moist; weak fine granular structure; loose, friable, non-sticky and non-plastic; few fine and medium random roots; medium acid (pH 6.0); sample of this horizon taken 20 feet uphill from rest of sample because it was disturbed on surface below; abrupt smooth boundary.

B1 3" -10" Reddish brown to yellowish red (5YR 5/4 - 5/6) light clay loam, dark red (2.5YR - 10R 3/6) moist; moderate medium subangular blocky structure; hard, slightly firm, slightly sticky and non-plastic; few thin clay film on ped faces and in pores; few fine and medium random roots; gradual irregular lower boundary.

B21 10" - 31" Red (2.5YR 4/6) clay loam, dark red (2.5YR 3/6) moist; strong medium to coarse angular blocky structure; extremely hard, firm, slightly sticky and plastic; many moderately thick continuous clay film on ped faces and in pores; few fine and medium random roots; strongly acid (pH5.5); gradual irregular boundary.

B22 34" - 45" Red (2.5YR) clay loam, dark red (2.5YR 3/6-4/8) moist; weak medium angular blocky structure; very hard, firm, slightly sticky and slightly plastic; few medium and fine random roots; common discontinuous thin clay film on ped faces and in pores; strongly acid (pH 5.5); gradual irregular boundary.

B3 45" - 61" Yellowish red to red (5YR-2.5YR 5/6) heavy loam, dark reddish brown to yellowish red (5YR 3/4 - 4/6) moist; massive; very hard, firm, slightly sticky and slightly plastic; very few very thin clay in pores; few fine and medium roots; medium acid (pH 5.8) gradual irregular boundary.

C1 61"+ Brown to dark brown (10YR 4/3) fine sandy loam, moist when crushed from parent material; massive; hard, friable, non-sticky and non-plastic; medium acid (pH 5.8).

VARIATIONS:

A cobbly profile is very common but often profiles that are free of rock fragments are also seen. The subsoils may be very strongly acid in some places. Depths are usually greater than 48 inches to parent material but some areas may be as shallow as 36" and other areas are over 60" deep. Profiles are often quite micaceous.

TRABUCO-FALLBROOK SERIES - 33

Trabuco Series

The Trabuco Series is composed of maximal Non-Calcic Brown soils developed on medium and coarse grained mostly basic igneous and some acid igneous rocks, under grass, oaks, some digger pine and/or scattered brush cover at elevations from 1,000 to 2,750', Those well drained to somewhat excessively drained soils have medium to rapid runoff. The A horizons are brown to reddish brown loams, slightly acid, and generally massive. The B1 horizons are usually reddish brown loams to clay loams, slightly acid, massive to blocky structure. B2 horizons are reddish brown heavy clay loams and clays, medium acid to neutral, massive to blocky. Underlying B horizons are coarse and medium grained, diorites, occasional gabbros and hornblende quartz diorites slightly to highly decomposed.

Fallbrook Series

The Fallbrook Series is composed of minimal Non-Calcic Brown soils developed on similar parent materials as Trabuco soils. Drainage, runoff, elevation range and cover are same as Trabuco soils. The A horizons are brown to reddish brown fine sandy loams or loams, slightly or medium acid, massive to granular or blocky structure. B horizons are reddish brown heavy loams to sandy clay loams, medium or slightly acid and massive to blocky. Underlying parent material is same as for Trabuco soils.

TRABUCO-FALLBROOK soils occur together in complex with Trabuco being the dominant soil and are generally associated with Auburn soils developed from fine grained basic igneous and metaigneous parent rocks, Bancas soils.

Trabuco-Fallbrook and Bancas soils resemble each other in some respects. Trabuco, Bancas and Fallbrook soils are maximal, medial and minimal Non-Calcic Brown soils respectively differing mainly in development of B horizons but Bancas soils supports mainly brush, mostly manzanita and chemise cover and tend to be more eroded then Trabuco or Fallbrook soils.

TRABUCO-FALLBROOK soils include small bodies of other soils too complex in pattern to delineate but will not exceed 15% of any mapping unit. Included will be up to 6% Auburn soils and 10% Bancas soils.

A profile typical of Trabuco series is found at 1,000' N 800' W of SE corner Sec 28, T5S, R17E, MDB&M.

A1 0-5" Brown (7.5YR 5/4) light loam, dark brown (7.5YR 4/2) moist; massive; hard, friable, non-sticky and non-plastic; slightly acid (pH 6.5); abrupt smooth boundary.

A3 5-15" Reddish brown (5YR 5/4) loam, dark reddish brown (5YR 4/3) moist; massive; hard, friable, very slightly plastic and slightly sticky; slightly acid (pH 6.5); abrupt smooth boundary.

B1 15-20" Dark reddish brown (5YR 3/3) light sandy clay loam, moist; friable, slightly sticky and slightly plastic; slightly acid (pH 6.2); abrupt smooth lower boundary.

B21 20-25" Dark reddish brown clay (2.5YR 3/4) moist; weak coarse prismatic to strong medium to coarse angular blocky structure; firm, very plastic and slightly sticky; slightly acid (pH 6.3) clear smooth boundary.

B22 25-30" Dark reddish brown (2.5YR 3/5) clay, moist; weak columnar to coarse angular blocky structure; firm, plastic and sticky; medium acid (pH 6.0); clear wavy boundary.

C 30"+ Decomposed rock about 3" thick over hard bedrock.

Variations: Effective depth varies from 20 to 36" with few inclusions up to 60" deep. Surface textures vary from sandy loams to heavy loams, are nearly neutral to medium acid, and may be yellowish brown to brown to reddish brown or yellowish red or reddish yellow in some places. Small areas may have scattered rock outcrops. B horizons are browns to strong browns to reddish yellows or yellowish reds to reds in the 7.5YR to 2.5YR hues, neutral to medium acid in reaction but are typically reddish brown.

A profile typical of Fallbrook soils is found at 1,800' S, 800' W, of NE corner Sec 28, T5S, R17E, MDBM.

A1 0-15" Brown (7.5YR 5/4) heavy fine sandy loam or light loam, dark reddish brown (5YR 3/4-3/3) moist; weakly fine granular structure to massive; slightly hard (0-2") over hard, very friable to friable, non-sticky and non-plastic, abundant fine random roots; slightly acid (pH 6.2); clear wavy boundary.

B1 15-27" Reddish brown (5YR 4/4) slightly gravelly heavy loam, dark reddish brown (5YR 3/3) moist; very weak subangular blocky structure to massive; hard, friable, slightly sticky and slightly plastic; few fine interstitial pores, many fine

to medium random roots; few thin clay film forming bridges between sand grains; medium acid (pH 6.0); clear wavy boundary.

B2 27-36" Reddish brown (5YR 5/4) light sandy clay loam to sandy clay loam very slightly consolidated, red (2.5YR 3/6) moist with common fine distinct mottles of reddish yellow (5YR 6/6); moderate medium to coarse angular blocky structures, very hard, firm, slightly sticky and plastic; few fine interstitial pores; no roots seen; many moderately thick clay film forming bridges between sand grains and filling pores; gradual irregular boundary.

C 36"+ Yellowish red (5YR 6/5) softly consolidated parent material of fine sandy loam texture, dark reddish brown (5YR 3/4) when moist with few fine distinct reddish yellow (5YR 5/8) mottles; massive to weak fine granular structure; hard to very hard, firm becoming friable once crushed, non-sticky and non-plastic; few fine interstitial pores; no roots seen; common moderately thick clay film filling occasional vertical fractures; slightly acid (pH 6.4); parent material gradually becoming parent rock with depth.

Variations: Surface textures vary from sandy loams to loams. B horizons vary from loams to sandy clay loams. Depth varies from about 20 to 36" with inclusions of deeper soils.

3Mb3A-33
BD-1
and
3Mb3A-33
BD-1
and
3Mb3A-33
D-1

Trabuco-Fallbrook loams, 2-16% slopes

These soils are mapped as a complex because the individual soils are too intermingled and difficult to separate. Soil profiles are similar to those previously described for the Trabuco and Fallbrook series. Trabuco is the dominant series in the complex and may make up to 60 to 70 percent of the mapping unit.

3Mb3A-33
EF-1

Trabuco-Fallbrook rocky loams, 16-51% slopes

Similar to Trabuco-Fallbrook loams 2-16% slopes except rock outcropping is 3 to 51%, may be somewhat stony, cobbly and/or gravelly. The steeper slopes tend to be rockier than the moderately steep slope areas.

THE WHITEROCK series is composed of Lithosols developed from metasedimentary parent rocks under grass, some oak, some digger pine and/or some brush cover at elevations from about 1,000 to 2,500 feet. These somewhat excessively drained soils have rapid runoff. The A horizons are granular or crumb, pale brown to light yellowish brown or brown loams, medium or slightly acid. The C horizons tend to be more reddish than A horizons being light brown to brown loams which are medium to strongly acid. Bedrock rock is usually found at less than 10". Whiterock soils are usually associated with Non-Calcic Brown Auburn and Dorado soils, darker colored less acid Daulton soils and occasionally Maymen soil material which is a little higher in elevation and usually has Chamise and Manzanita brush cover.

Total inclusions of associated soils will not exceed 15 percent of any mapping unit. Whiterock soils as mapped include up to 10 percent Daulton soils, 10 percent Dorado soils, 2 percent Auburn soils, 5 percent Maymen soil material. Whiterock soils constitute a minor acreage in the northern part of the Mariposa Soil Survey Area.

WhE-72
VI-1
and
WhF2-72
VII-1

Whiterock rocky loam, 5-31% slopes

Location of a typical site is 1 mi S on Dunlap Gordon Road from Hwy 49 near Bear Valley.

A0 Partly decomposed oak leaves and grass.

A1 0-2" Brown (10YR 5/3) light loam, dark brown (7.5YR 3/2) when moist; strong fine granular structure;

slightly hard, friable, non-sticky and non-plastic; plentiful micro and fine random roots; many fine and micro pore spaces separating sand grains; medium acid (pH 6.0); abrupt smooth boundary.

C 2-7" Brown (10YR 5/3-4/3) loam, dark brown (7.5YR 3/2) moist; massive; hard, friable, non-sticky and non-plastic; plentiful fine and micro roots; common micro and fine random pores; sand grains held together by very few very thin clay films; strongly acid (pH 5.5); clear irregular boundary.

R 7"+ Hard slightly decomposed slate-like rock material vertically inclined.

Variations: Color range of profile is covered by the browns of the 7.5YR and 10YR hues. Textures are sandy loams and loams and they vary from strongly acid to medium acid.

Depth is mostly under 10" to bedrock but extremely rocky areas may be as deep as 20".

LOAMY ALLUVIALS - [illegible]

Loamy Alluvial soils is composed of Regosols, Prairie Alluvials, Noncalcic Brown Alluvials and relatively smaller amounts of other alluvial soils under mostly grass, some oak, in places some conifers and along incised channels some willows and/or cottonwood trees, at elevations from 500 feet to over 2,500 feet. Small areas are cultivated for orchard, vineyards and/or annual hay and grain crops. These moderately well and/or well drained soils have slow runoff.

Textures of the surface horizons are mostly loams but vary from sandy loam to clay loam. Colors are mostly grayish brown or browns but vary from grays to reddish browns. Subsoils are similar to the surface soils in color and texture ranges but for the most part tend to be slightly finer textured than surface soils. Some small areas may have clay subsoils. Substrata varies from sands to clays but are mostly sandy loams and loams. Effective depth exceeds 36 inches but for the most part is over 60 inches deep. Restrictive materials consist of droughty sands and larger rocky fragments and occasionally a semi-consolidated alluvium, clay pan or hardpan, and weathered or indirectly related bedrock materials when encountered in the 36 to 60 inch depth range. Parent materials are alluvium of mixed origin; or from sedimentary or [illegible] alluvium; or granitic alluvium; or basic igneous alluvium.

Most of these soils are generally associated with Auburn, Dorado, [illegible], [illegible] and [illegible] soils and found in swale positions or on recent alluvial fans or alongside of incised channels of [illegible] drainages.

This group of soils constitute only a very small percent of soils in the northern part, Mariposa soil survey area.

12-24
29-1 Loamy Alluvials, 3-9% slopes

Profile is variable and no location is typical of any large area.

Variations: Except as noted in characterizations, some areas may be somewhat gravelly, some areas may be slightly rocky, some areas may include wet spots especially around springs or seeps, and some areas may be partly a little flatter or little steeper than indicated but average slope for area will fit range indicated.

Inclusions: Included will be less than 15 percent soils in association mentioned and these will be only footslopes where applicable. For the most prt Auburn and Dorado soils will constitute the inclusions in the transition areas. Some of the footslopes are also colluvial.

MISCELLANEOUS LAND TYPES

MINE DUMPS (MT)

Mine dumps consist mostly of crushed ore near mines and stamping mills, most of which have been abandoned. They may occur almost anywhere but most are near and in the Mother Lode area and may be at the bottom of hills along streams or at the tops of them or in between. They occur mostly in bodies less than 15 acres.

A typical area is the Pine Tree mine area near top of Bagby grade on Highway #49, south side of Merced River. This unit is a very minor acreage in the northern part of Mariposa soil survey.

MT Mine Dump

Consists of mostly crushed rock fragments from sand to stone size with few fines. When dumped near stream channels in some cases, the fines may wash out.

RIVERWASH AND MINE TAILINGS (MT & RX)

Riverwash and Mine Tailings consist mostly of stones, cobbles, gravels, and sands, angular or rounded and may or may not be loosely held together with fines. Cover consists of mostly willows and at higher elevations some conifers, with small patches of grass and forbs where fines are sufficient to hold enough water. These areas occur in, on and/or near intermittent and perennial stream channels. A typical area is along Maxwell creek drainage near Coulterville.

MT & RX Riverwash and Mine Tailings

Sands, gravels, cobbles and stones which may or may not be loosely held together by fines found mostly along stream channels.

[illegible] Riverwash and Mine Tailings

Sands, gravels, cobbles and stones which may or may not be loosely held together by fines found mostly along stream channels.

[illegible] Riverwash and Mine Tailings

Sands, gravels, cobbles and stones which may or may not be loosely held together by fines found mostly along stream channels except mine tailings occur in smaller bodies.

ROCKLAND (RL)

Rockland consists of extremely (over 90%) rocky, stony, cobbly and/or gravelly areas with very little soil material in between fragments or localized in small areas of nearly pure rock outcroppings. Rocks consist almost wholly of acid igneous, basic and/or metabasic igneous metasedimentary and ultra basic forms.

Vegetative cover of brush, oaks, digger pine and/or grass is sparse. During wet seasons much of the rock becomes lichen covered. Rockland areas may be as large as 40 acres or more but are usually less than 20 acres and include small areas of adjacent soils. Rockland is generally associated with all the residual soils and is generally related to them in as much that the soils are derived from parent rock similar to the Rocklands. A typical Rockland site is seen near Merced River below Telegraph Hill.

Rl. Rockland

Rock, acid igneous, basic or basic meta igneous, metasedimentary or ultra basic rock, some of which may have shattered to stones, cobbles and/or gravels in same location.

CF-57
5/11/56

TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE BERKELEY, CALIFORNIA SOIL CONSERVATION SERVICE

TN - Soils - 9

April 17, 1963

STANDARDS FOR SOIL DESCRIPTIONS

A significant technical improvement in soils surveys has resulted from greater standardization and more uniform interpretation of terms used in describing soils. There has also been significant progress in describing soils in more quantative (less qualitative) terms. This is a continuing effort and further improvements can be expected as new procedures and techniques are developed.

The attached "Soil Description" standards are now used by all California Soil Scientists in preparing the narrative type soil series and soil mapping unit descriptions. Also in tabulating soil characteristics and qualities on the CF-77 (Revised 2/62) and in describing interpretative groupings for technical guides.

We are using this means of distributing these "Soil Description" standards to all planning technicians. We suggest that you file this material with your Technical Notes and include it in the list of references in your work unit technical guide.

Leonard R. Wohletz
State Soil Scientist

Attachment

USDA-SCS
Berkeley, California
January 1962

SOIL DESCRIPTIONS

These descriptions basically are from the Soil Survey Manual, Agriculture Handbook No. 18, but in a few instances definitions have been expanded for trial use to more adequately fit conditions in California. These definitions and abbreviations are to be used on the Soil Description Form, CF-123.

Soil type: Name, as Ramona sandy loam, plus field mapping symbol.

Area: Name of survey area or county or SCD.

Location: Exact location if possible including approximate distance from nearest reference point shown on non-sectionized maps. In sectionized areas indicate location within section on soil description form.

Classification: Especially Great Soil Group if known.

Climate: Mean annual precipitation (P), mean annual temperature (T) (average January temperature (J) and average July temperature (J).

Native Vegetation or Crop: Such as annual grass, grass, oak-grass, shrubs, etc. Specify dominant species if known.

Parent material: Such as basalt, fine textured alluvium from basic igneous rocks, etc.

Physiography: Such as: high terrace, alluvial fan, mountainous uplands. Add names of formations, where known.

Relief: Give letter designation or name of soil slope class and indicate concave or convex, single or complex slopes. The following is a guide:

USDA-SCS-PORTLAND. OREG. 657

Symbol	Range in % slope	Descriptive terms for slopes	
		Simple	Complex
A	0 - 2	nearly level or level	nearly level or level
B	2 - 5	gently sloping	undulating
C	5 - 9	moderately sloping	gently rolling
D	9 - 16	strongly sloping	rolling
E	16 - 31	moderately steep	hilly
F	31 - 51	steep	steep
G	51 - 76	very steep	very steep
H	76+	extremely steep	extremely steep

Slope: Percent slope at site of description.

Aspect: Direction to which slope faces.

Elevation: Best estimate if topographic maps not available.

Drainage: "On the basis of observations and inferences used to obtain classes of runoff, soil permeability, and internal soil drainage, general relative soil drainage classes are described below." These drainage classes are based on those morphological characteristics that are affected by different degrees of aeration within the soil profile. The definitions of drainage classes listed below are somewhat modified from those presented on pages 170 to 172 of "The Manual". They are intended to conform with the definitions of the revised classification system, 7th Approximation. These proposed definitions are for field trial only.

Very poorly drained*: The water table remains at or near the surface a greater part of the time. Field evidences of very poor drainage are the presence of a water table above 18 inches, a peaty or mucky surface horizon, or colors:

I. Immediately below any dark surface horizon at least 7 inches thick (dry values of 5.5/ or less and moist values of 3.5/ or less) as follows: (a) If hues are 10YR or redder and are accompanied by mottling, chromas are /2 or less on ped faces or in the matrix; and if hues of 10YR or redder are not mottled, chromas are less than /1; (b) if hues are between 10YR and 10Y and are accompanied by distinct or prominent mottles, chromas are /3 or less on ped faces or in the matrix; and if hues between 10YR and 10Y are not mottled, chromas are /1 or less; (c) hues bluer than 10Y; (d) any color if due to uncoated grains of sand;

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* The miscellaneous land types "Marshes" and "Swamps" are described on pages 308 and 310 of "The Manual". Normally they are too wet for grazing but may provide some forage in very dry years.

OR

II. If the surface 7 inches are not dark then mottles, iron-manganese concretions, or chromas of /2 or less must occur within 7 inches of the soil surface; and if a textural B horizon is present it has (a) dominant chromas of /1 or /2 in hues of 10YR or redder on ped faces or in the matrix if peds are lacking, accompanied by mottles of stronger chroma; (b) dominant chromas of /1 to /3 in hues of 2.5Y or yellower on the ped faces, or in the matrix if peds are lacking, accompanied by mottles of stronger chroma and redder hue; (c) dominant chromas of /1 or less on ped faces or in the matrix if no peds are present, with or without mottles of stronger chroma.

Soils that are very poorly drained due to a moving water table may have oxidized rather than reduced colors because of dissolved oxygen in the water. Drainage is a minimum prerequisite for the growth of important crops. Usually grazing is possible, at least seasonally, and hay may be harvested in drier years.

Poorly drained: The soil remains wet much of the time with the water table seasonally near the surface for prolonged intervals. Field evidences of poor drainage are the presence of a high water table (at depths of 18 to 36 inches), colors as above but near the surface (above 20 inches), and pronounced accumulations of water soluble salts at or near the surface in saline areas. Soils usually lack peaty or mucky surface horizons. Drainage is necessary for the growth of important crops. Grazing is possible most of the time, and hay can usually be harvested.

Imperfectly or somewhat poorly drained: Soil is wet for significant periods, but not all of the time, usually because of a slowly permeable layer or a high water table. Field evidences of imperfect drainage are the presence of a water table (at depths of 36 to 60 inches), colors as above but within 20 to 36 inches of the surface, unusually thick and dark A horizons (related to abundant growth of coarser grasses and slower decomposition rates because of wetness), pronounced accumulations of water soluble salts within 36 inches, or a combination of these. Artificial drainage is needed for the growth of most deep rooted crops and many others that are sensitive to poor aeration. Drainage may also be necessary to maintain a favorable salt balance.

Moderately well drained: Profile is wet for a small but significant part of the time, usually because of a slowly permeable layer within or immediately beneath the solum, a relatively high or intermittently high water table (usually below 5 feet), surface additions of water by runoff from areas higher up the slopes, or a combination of these conditions. (This class is particularly difficult to assess in drier climates or where winter rainfall occurs when temperatures are low enough to almost inhibit growth.) Evidence includes somewhat thicker and darker A horizons as contrasted to those of well drained soils (grass vegetation), indistinct mottling in the lower B horizons or within 36 inches of the surface or both. Artificial drainage may be needed for some deep rooted crops and some others that are particularly sensitive to short periods of poor aeration.

Well drained: Water is removed from the soil readily but not rapidly. Soils are commonly intermediate in texture but in dry climates may even be fine textured. Chromas are generally more than /2 below the surface horizon unless the parent materials have an inherently low chroma. Soils are free of mottling, at least within the usual depth of plant roots. Under natural conditions of drainage soil aeration is not a problem associated with well drained soils.

Somewhat excessively drained: Water is removed from these soils rapidly. Soils may be very shallow or shallow, many have little horizon differentiation and are sandy and very porous. Soils are similar in color to well drained soils. Except in humid climates with a uniform distribution of rainfall or unless irrigated, the soils are droughty and produce a narrow range of crops.

Excessively drained: Water is removed from these soils very rapidly. Soils are commonly Lithosols or lithosolic, and may be steep, very porous, or both. Soils are similar in color to well drained soils. Dark A horizons are occasionally present. Most of these soils are unsuitable for ordinary crop production.

Altered drainage: Soils are mapped on the basis of the drainage characteristics found in the profile as indicated above. Changes may have occurred where there has been no corresponding change in soil morphology. Such changes are commonly due to reclamation, as in artificial drainage or irrigation, but they may also be due to a natural deepening of the stream channels or to the filling of depressions or to wetness due to seepage from drainage or irrigation canals. Altered drainage conditions need to be described as they affect potentialities for crop production. Usually the same relative drainage terms can be used for altered drainage as those used for natural drainage (above). For example Columbia soils are naturally imperfectly drained but in some instances by the use of dikes, drainage ditches, lowering of water tables through pumping or channel erosion, they are now essentially well drained. Thus a well drained phase of the Columbia soils may be recognized. Conversely a poorly drained phase may occur. However, the drained phase or the poorly drained phase must retain the normal mottling characteristics of the Columbia series.

Permeability: Use appropriate class name as follows (pp. 167-169 of "the Manual"):

Class	Estimated inches/hour through saturated undisturbed cores under ½ inch head of water.
Very Slow	less than 0.05
Slow	0.05 to 0.20
Moderately Slow	0.20 to 0.80
Moderate	0.80 to 2.50
Moderately Rapid	2.50 to 5.00
Rapid	5.00 to 10.00
Very Rapid	over 10.00

Runoff (or external drainage): Indicate the relative water is removed by flow over the surface of the soil. Use appropriate class name as follows (pp. 166-167 of "The Manual"):

Ponded: None of water added to the soil as precipitation or by flow from higher land escapes as runoff but must pass through the soil or evaporate. Areas are usually distinct depressions. (Ponding should be of sufficient duration to be injurious to crops.)

Very slow: Surface water flows away so very slowly that free water lies on the surface for long periods of time or enters immediately into the soil. Soils are usually nearly level or very open and porous. Water either evaporates or percolates through the soil.

Slow: Surface water flows away so slowly that free water covers the soil for significant periods or enters the soil rapidly and a large part of the water passes through the profile or evaporates. Slopes are very gentle and the water erosion hazard is slight.

Medium: Surface water flows away at such a rate that most of the water enters the soil profile and free water lies on the surface for only short periods. Most of the water is absorbed by the soil where it is used for plant growth or lost by evaporation or percolation. Under cultivation the water erosion hazard may be slight or moderate.

Rapid: A large portion of the water moves rapidly over the surface of the soil and a small part moves through the soil profile. Soils are usually moderately steep to steep and have low infiltration capacities. Erosion hazard is moderate to high.

Very Rapid: Surface water runs off nearly as fast as it is added and only a very small proportion of the water enters the soil. Soils are usually steep or very steep, have low infiltration capacities, and a high to very high erosion hazard.

Erosion (accelerated): Indicate the class of eroded soils including whether eroded by wind or water, as follows (pp. 251-269 of "The Manual" and the Report of the Committee of the Nat. Wk. Pl. Conf. on Mapping Eroded Soils).

Uneroded or slightly eroded: Less than 25% of the original surface 6 inches or of the A horizon if deeper, or of the plowed layer removed.

Moderately eroded: 25 to 75% of the original surface 6 inches or the A horizon if deeper, or of the plowed layer is removed. Where eroded by wind, hummocks up to 25 inches high may occur as well as an occasional blow-out area.

Severely eroded: 75% or more of the original surface 6 inches or the A horizon if deeper, or of the plowed layer, has been removed and as much as 25% of the subsoil. Occasional deep gullies and frequent shallow gullies may be present. Where eroded by wind, hummocks more than 25 inches high and blow-out areas are common.

Very severely eroded: All of the original topsoil and 25 to 75% of the subsoil has been removed. Occasional deep gullies and frequent shallow gullies are present. Blowouts occupy 15 to 40% of the area delineated. (More severely wind eroded soils or soils with many deep gullies would be included with miscellaneous land types such as blown-out land, dune land, and gullied land.)

Moisture: Indicate whether soil is dry, slightly moist, moist, or wet when examined and approximate depths. (Soil structure in many cases is not the same at different moisture contents.)

Ground water: Indicate depth at which a water table is observed.

Salt or alkali: Give appropriate class of salinity and/or alkalinity if applicable. (pp 357-363 of "The Manual" and Agric. Handbook 60 of the USDA, "The Diagnosis and Improvement of Saline and Alkali Soils)". A saline soil contains enough salts so distributed in the profile that they interfere with the growth of most crop plants. An alkali soil has either so high a degree of alkalinity--pH 8.5 of higher--or so high a percentage of exchangeable sodium--15% or higher--or both, that the growth of most crop plants is reduced. Soils with more than 15% exchangeable sodium commonly have pH values of 8.5 or above but exceptions occur where other exchangeable ions are mainly hydrogen.

Saline soils: On the basis of salt content soils have been grouped into four classes:

Class	Approx. % salt	Conductivity of extract mmhos/cm
Nonsaline	0 - 0.15	0 - 4
Slightly Saline	0.15 - .35	4 - 8
Moderately Saline	0.35 - .65	8 - 15
Strongly Saline	above .65	above 15

In these 4 classes crops are not affected, slightly affected, moderately affected, and seriously affected, respectively. (Table 8, p. 67 of Handbook 60 indicates the conductivity at which a 50% reduction in yield occurs for the more common crops.)

Alkali soils: Usually alkali soils contain localized areas with sufficient alkali to be detrimental to crop growth. The alkali soils are classified on the basis of the frequency of these areas. In some places a mappable soil area is uniformly affected and the alkali class refers to the severity of the alkali condition. Table 1 of Agr. Infmn. Bull. No. 216 of the ARS lists the tolerance of various crops to exchangeable sodium percentage (ESP). The crops are listed in groups of increasing tolerance but stunted growth occurs within the ESP ranges indicated. Because soil textures, amounts and kinds of soluble salts, and the kinds of plants grown all affect the ESP values, no uniform range of ESP can be established for the alkali classes.

Table 1

Tolerance	ESP	Crop
Extremely sensitive	2 - 10	Deciduous fruits, nuts, citrus, Avocados
Sensitive	10 - 20	Beans
Moderately tolerant	20 - 40	Clover, oats, tall fescue, rice, Dallisgrass
Tolerant	40 - 60	Wheat, cotton, alfalfa, barley, tomatoes, beets
Very tolerant	over 60	Crested and Fairway wheatgrass, tall wheatgrass, Rhodes grass

Nonalkali: Spots of affected soils, if present, are too few to be significant.

Slightly alkali: Soil slightly affected and may contain up to 5% alkali spots unsuited to most crops. (Yields of extremely, sensitive and sensitive plants are reduced.)*

Moderately alkali: Soil moderately affected and may have 5 to 35% alkali spots unsuited to most crops. (Yields of moderately tolerant and tolerant crops are reduced.)*

Strongly alkali: Soil strongly affected and may have more than 35% alkali spots unsuited to most crops, (Yields of very tolerant crops are reduced.)*

Stoniness: Stones are detached rock fragments and if rounded, they are more than 10" in diameter, or if flattened, more than 17" along the long axis. "Boulder" is a term sometimes used for rocks over 24" in diameter (pp. 216-223 and 296 of "The Manual"). Classes are as follows based on an average diameter of the stones of 1 foot:

Class 0: Stones more than 100 feet apart and cover less than 0.01% of the area.
Class 1: Stones interfere with tillage. They are 30 to 100 feet apart, and cover 0.01 to 0.1% of the surface.
Class 2: Stones make tillage of intertilled crops impracticable unless cleared. They are 5 to 30 feet apart and occupy 0.1 to 3 percent of the surface.
Class 3: Practically all tillage with machinery is impracticable unless cleared. Stones are 2.5 to 5 feet apart and occupy 3 to 15 percent of the surface.
Class 4: Stones are so frequent that the value of the land for range or for forestry is limited. Stones are less than 2.5 feet apart and occupy 15 to 90 percent of the surface.
Class 5: Land essentially paved with stones.

Where 5 classes of stoniness are significant they may be designated stony; very stony; extremely stony (e.g. Henneke very stony loam); Stony land (series name) soil material; and Rubble land. Classes 3 and 4 may be combined as Stony land if other soil characteristics are not favorable for improved pasture and other uses. Other combinations may also be desirable.

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* Statements in parenthesis are NOT in "The Manual" and are tentative suggestions applicable to areas between alkali spots where these are present.

Rockiness: Rockiness refers to bedrock exposures or patches of soil too thin over bedrock for use (pp. 220 to 223 and 297 of "The Manual").

Class 0: Less than 2% bedrock exposed.
Class 1: Bedrock exposures interfere with tillage and cover 2 to 10% of the surface (about 100 to 300 feet apart).
Class 2: Bedrock exposures make tillage of intertilled crops impractical and cover 10 to 25% of the surface (about 30 to 100 feet apart).
Class 3: Bedrock exposures prohibit use of all but light machinery and cover 25 to 50% of the surface (about 10 to 30 feet apart).
Class 4: Bedrock exposures make all use of machinery impractical and cover 50 to 90% of the area (about 10 feet or less apart). Land may have some value for poor pasture or for forestry.
Class 5: Bedrock exposures occur over 90% of the surface.

Where 5 classes of rockiness are significant they may be designated rocky; very rocky; and extremely rocky, e.g. Exchequer extremely rocky loam; Rock land, (series name) soil material; and Rock land. Most commonly classes 4 and 5 are both included in Rock land and class 3 may be included also if other soil characteristics are not favorable for improved pasture or other uses. Other combinations may also be desirable.

Additional notes should mention flooding or overflow hazards, infiltration rates, presence of landslips, deposition, bank cutting, distance of profile from tree, etc. where applicable.

Horizons: (See Chapter V, pages 24-30 of the Revised Classification - 7th Approximation)

Soils with textural B horizons usually have the following horizon sequence although some of these horizons may be absent or too thin to recognize: 01, 02, A1, A2, A3, B1, B2, B3, C, and R. Symbols b, ca, cs, cn, f, g, h, ir, m, p, sa, si, t, and x are used to indicate departures subordinate to those indicated by capital letters. Further subdivisions of the A and B horizons are A31, A32 or B31, B32ca, B33cacs, etc. The upper layer of any C or R horizon is always C1 or R1 and succeedingly deeper subdivisions have successively larger numerals. The symbol "p" is only used with the A horizon but the plow layer may be subdivided into Ap1, Ap2, etc. and is followed by the next recognizable horizon such as A1, A3, B2, C1, etc. Soils without B horizons do not have A2, A3, B1, or B3 horizons. Transitional horizons such as AB and AC may occur; or mixed horizons A&B and B&A horizons as defined in Chapter V. Lithologic discontinuities are prefixed by Roman Numerals, II being used for the first discontinuity, III for the second (even if it is like the topmost layer), etc.

Depth: In inches from top of upper mineral horizon except for organic soils measure distance below surface of profile.

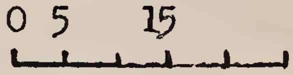
Color (including mottles): (pp. 189-203 of "The Manual"). Use Munsell notations to nearest whole chip (i.e. 2.5YR NOT 4YR; 3/2 NOT 3.5/2; etc.) Where soils are mottled the colors should be noted as follows:

1. Where two or more colors occur in an intricate pattern but randomly mixed indicate color as mottled 2.5Y 5/3 5Y 4/4, etc.
2. Where one color is the continuous phase or matrix with mottles contained in it, designate this as the dominant color and specify the abundance, size, and contrast of the mottles as indicated below:

Abundance:	f-few	(mottles < 2% of surface area)
	c-common	(" 2-20% " " ")
	m-many	(" > 20% " " ")

Size:	1-Fine, < 5 mm. in diameter
	2-medium, 5 to 15 mm. in diameter
	3-large, > 15 mm. in diameter

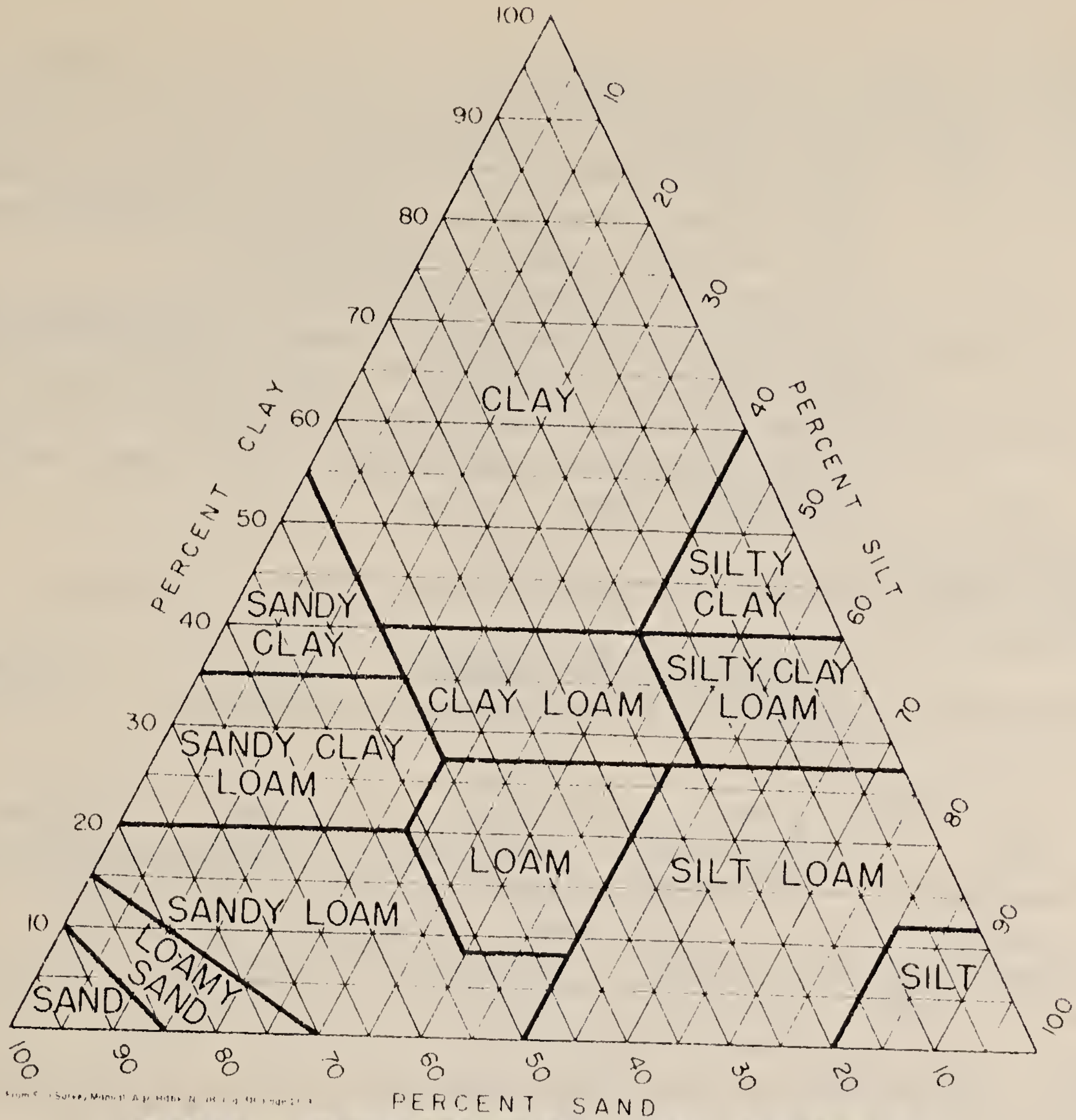
Scale - mm.



Contrast:	f-faint, hue and chroma of matrix and mottles similar.
	d-distinct, mottles are more than $\frac{1}{4}$ letter interval in hue or more than 1 value or chroma different than the matrix.
	p-prominent, matrix and mottles vary several (3 or more) units in hue, value, and chroma.

The notation 10YR 5/1 c2p 10YR 5/6 and 5YR 5/4 would read: gray with common medium prominent mottles of yellowish brown and yellowish red.

Texture: Soil texture refers to the relative proportions of the various size groups of individual soil grains in a mass of soil. Specifically it refers to the proportions of clay, silt, and sand below 2 mm. in diameter. Particles larger than 2 mm. and smaller than 10 inches (gravel 2mm. to 3 inches, cobbles 3 to 10 inches) are recognized by modifiers of textural class names. Soils are gravelly or cobbly when they contain about 17 to 50% gravel or cobbles by weight; very gravelly or very cobbly when they contain 50 to 90% gravel or cobbles; and the appropriate miscellaneous land type if they contain more than 90% gravel or cobbles.


100
90
80
70
60
50
40
30
20
10
PERCENT CLAY
10
20
30
40
50
60
70
80
90
100
PERCENT SILT
100
90
80
70
60
50
40
30
20
10
PERCENT SAND
CLAY
SILTY CLAY
SANDY CLAY
SILTY CLAY LOAM
CLAY LOAM
SANDY CLAY LOAM
LOAM
SILT LOAM
SANDY LOAM
LOAMY SAND
SAND
SILT

SOIL TEXTURAL CLASSES

The following textural abbreviations and modifiers will be used:

st - stones and stony
k - cobbles and cobbly
g - gravel and gravelly
vcos - very coarse sand
cos - coarse sand
s - sand
fs - fine sand
vfs - very fine sand
lcos - loamy coarse sand
ls - loamy sand
lfs - loamy fine sand
cosl - coarse sandy loam
sl - sandy loam
fsl - fine sandy loam
vfsl - very fine sandy loam

l - loam
si - silt
sil - silt loam
scl - sandy clay loam
cl - clay loam
sicl - silty clay loam
sc - sandy clay
sic - silty clay
c - clay

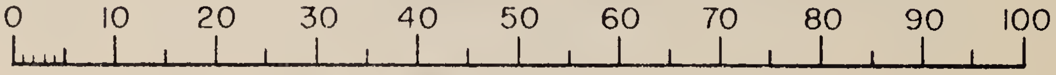
Structure: (pp. 225-230 of "The Manual"). Structure is described by grade or distinctness, size, and type. Terms are used to describe natural aggregates in the soil called peds in contrast to clods caused by disturbance, fragments by rupture of peds, and concretions by local concentrations of compounds that irreversibly cement the soil grains together.

Grade: m - massive, no aggregation.
sg - single grain, no aggregation
1 - weak, peds barely observable in place, and when disturbed, few entire peds are observed, much of the material being unaggregated.
2 - moderate, peds easily observable but not distinct in place, and when disturbed, many entire peds are observed and little unaggregated material.
3 - strong, peds are distinctly visible in place, and when disturbed, nearly the entire mass consists of entire peds.

Size: Size differs with kind of structure as follows:

size class	Diameter of granules or crumbs	Thickness of plates	Diameter of blocks	Diameter of prisms
vf - very fine	< 1 mm.	< 1 mm.	< 5 mm.	< 10 mm.
f - fine	1 - 2 mm.	1 - 2 mm.	5 - 10 mm.	10 - 20 mm.
m - medium	2 - 5 mm.	2 - 5 mm.	10 - 20 mm.	20 - 50 mm.
c - coarse	5 - 10 mm.	5 - 10 mm.	20 - 50 mm.	50 - 100 mm.
vc - very coarse	> 10 mm.	> 10 mm.	> 50 mm.	> 100 mm.

Scale - mm.



Type: There are 7 types of structure each with its own distinctive shape and arrangement.
gr - granular, approximately spherical with no accommodation of faces to surrounding peds, relatively nonporous peds.
cr - crumb, similar but peds are porous.
pl - platy, with vertical dimension small with regard to horizontal dimensions; faces accommodate with those of adjacent peds.
pr - prismatic, without rounded caps, vertical faces well defined and with angular vertices, vertical length relatively long with respect to horizontal dimensions; faces accommodate with those of adjacent peds.
cpr - columnar, with rounded caps, otherwise similar to the prismatic.
abk - angular blocky, blocklike with all 3 dimensions of the same order of magnitude, faces flattened, most vertices sharply angular; faces accommodate with those of adjacent peds.
sbk - subangular blocky, similar to angular blocky but both rounded and flattened faces occur with many rounded vertices.

Consistence: (pp. 231-234 of "The Manual"). Consistence is a measure of the property of a soil to adhere or cohere or to resist deformation or rupture. This property varies with moisture content and is measured when dry, when wet, and about midway between, when moist.

Dry consistence:

lo - loose, noncoherent.
so - weakly coherent, easily crushes to powder or single grain.
sh - slightly hard, easily broken between thumb and forefinger.
h - hard, can be broken in the hands without difficulty but difficult to break between thumb and forefinger.
vh - very hard, can be broken in hands with difficulty.
eh - extremely hard, cannot be broken in hands.

Moist consistence:

lo - loose, noncoherent
vfr - very friable, crushes under gentle pressure.
fr - friable, crushes easily under gentle to moderate pressure between thumb and forefinger.
fi - firm, crushes under moderate pressure between thumb and forefinger but resistance is distinctly noticeable.
vfi - very firm, crushes under strong pressure, barely crushable between thumb and forefinger.
efi - extremely firm, crushes under very strong pressure, cannot be crushed between thumb and forefinger.

Wet consistence:

Stickiness is measured by pressing the wet soil between the thumb and forefinger and noting its adherence.

so - nonsticky; practically no adherence when pressure released.
ss - slightly sticky; after pressure, soil adheres to both thumb and finger but comes off one rather cleanly. Does not appreciably stretch.
s - sticky; after pressure soil adheres to both thumb and finger and tends to stretch somewhat before pulling apart from either digit.
vs - very sticky; after pressure, soil adheres strongly to both digits and is markedly stretched when they are separated.

Plasticity is measured by rolling the wet soil between the thumb and finger and observing whether or not a wire or thin rod can be formed.

po - nonplastic; no wire is formable.
ps - slightly plastic: wire forms, but soil mass easily deformed.
p - plastic: wire forms, moderate pressure required to deform soil mass.
vp - very plastic: wire forms, much pressure required to deform soil mass.

Cementation: Refers to brittle hard consistence caused by some cementing agent such as silica or $CaCO_3$ which, unlike clay, does not deform under pressure.

cw - weakly cemented: Mass is brittle and hard but can be broken in the hands.
cs - strongly cemented: Mass is brittle, cannot be broken in hands, easily broken with hammer.
ci - indurated: Very strongly cemented; brittle, does not soften under prolonged wetting; breaks only with a sharp blow with a hammer; rings.

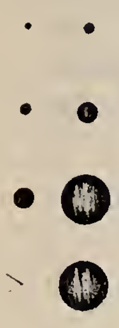
Cementation may be continuous or discontinuous and this feature should be described.

Roots and pores: (see pp. 245-250 of "The Manual"). Abundance, size, orientation, and distribution within peds for both roots and pores are similar. In addition, to fully describe pores, continuity classes and morphology must be recorded.

		roots	pores	No. / Unit* area of surface
Abundance classes:	v_1	very few	very few	less than 1
	1	few	few	1 to 3
	2	plentiful	common	4 to 14
	3	abundant	many	more than 14

*Unit is a square inch for fine, very fine, and micro roots and pores, a square yard for medium and coarse roots and pores.

Diameter classes except for micro size, follow those for granular structure:



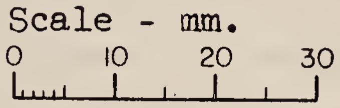
mi - micro: less than 0.075 mm.

vf - very fine: 0.075 to 1 mm.

f - fine: 1 to 2 mm.

m - medium: 2 to 5 mm.

co - coarse: over 5 mm.



Continuity classes (for tubular pores):

con - continuous - individual pores extend throughout the horizon
dis - discontinuous - individual pores extend only part way through the horizon

Orientation classes (for roots and tubular pores):

ver - vertical - orientation in general is more vertical than diagonal.
hor - horizontal - orientation in general is more horizontal than diagonal.
obl - oblique - orientation is more oblique (approaching 45° from vertical) than either horizontal or vertical.
ran - random: orientation is in all directions.

Distribution within horizons:
in - inped - most roots and pores are within peds
ex - exped - most of roots and pores follow interfaces between adjacent peds.

Morphology of Individual Pores:

Type Modifiers:

si - simple - tubular pores are not branched.
de - dendritic - tubular pores are branched.
op - open - pores are open, at least at upper end, or at one horizontal end.
cl - closed - both ends of pores are sealed from access to air and water by organic or organic-mineral particles or clay flows.

Types:

v - vesicular - roughly spherical or ellipsoidal in shape, not appreciably elongated in any direction.
i - interstitial - irregular in shape with faces that are curved inward; formed by curved or angular faces of adjacent mineral grains, or peds, or both.
t - tubular - more or less cylindrical in shape, elongated in one direction.

Examples of descriptions of roots:

I. 3vf, 2f - abundant very fine, plentiful fine roots
II. 2vf, 1f&m, v1c - plentiful very fine, few fine and medium, very few coarse roots.
III. 2vf&f hor - plentiful very fine and fine roots spreading out horizontally (usually indicative of a more compact layer which, in an extreme case, may be a hardpan).
IV. 2vf&f ex - plentiful very fine and fine roots concentrated along ped faces.
V. 2vf&f ver ex - plentiful very fine and fine roots concentrated along vertical ped faces.

Examples of descriptions of pores:

I. 3vf dis ver in si cl t - many very fine discontinuous vertical inped simple closed tubular pores.
II. 3vf i - many very fine interstitial pores.
III. 3vf i, 3vf, 2f t - many very fine interstitial, many very fine, few fine tubular pores.

Notes: To the extent that some or all of the elements describing pores are used they will be employed in the order as follows: abundance, size, continuity, orientation, distribution, type modifiers, and types. A minimum (and the most common) description of roots will include frequency and size where the roots follow a normal distribution pattern. Pores should at least have the type indicated in addition to frequency and size and any obvious departures from the normal distribution.

Clay Films: These are described by recording their frequency of occurrence, their thickness, and their locations.

Frequency: vl Very few - less than 5% of the ped faces and/or pores contain clay films.

1 Few - 5 to 25% of the ped faces and/or pores contain clay films.

2 Common - 25 to 50% of the ped faces and/or pores contain clay films.

3 Many - 50 to 90% of the ped faces and/or pores contain clay films.

4 Continuous - 90% or more of the ped faces and/or pores contain clay films.

Thickness: n - thin - so thin that very fine sand grains are readily apparent in the film and/or sand grains are only thinly coated and held together by weak bridges. (Require magnification to determine thickness.)

mk - moderately thick - very fine sand grains are enveloped by the film or their outlines are indistinct. Broken edges of the clay films can be seen by use of a hand lens. Where colloid is in bridges, broken bridges can be readily discerned with a hand lens.

k - thick - Clay films and their broken edges are readily visible without magnification; films appear to be relatively smooth because the very fine and fine sand grains are entirely encompassed by the film. Where the colloid is in bridges, the bridges hold the soil mass firmly together and the very fine and fine pores are nearly filled with colloid; broken bridges are readily visible to the unaided eye.

Morphology of Clay Films: Oriented clay occurs as films on peds, inside of pores, or in bridges.

pf - Clay films occur on ped faces. Where the structure grade is weak or the soil is structureless, ped faces are indistinct or absent. It is probable that only when the structure grade is moderate or strong that clay films on ped faces are discernible.

po - Clay films line tubular or interstitial pores.

br - Oriented clay occurs as bridges holding mineral grains together. (This is probably an initial step that occurs before clay films line interstitial pores and is best observed in coarse textured soils.)

co - Colloid stains mineral grains.

In describing clay films care must be exercised not to confuse pressure faces with clay films. Pressure faces may arise because of slickensides (caused by soil slip), swelling that pushes structural aggregates together and makes their sides look smooth, and enlargement of roots in tubular pores.

Examples of Clay Film Descriptions:

3mk po - Many moderately thick clay films in pores.
2n pf & po - Common thin clay films on peds and in pores.
4mk pf 2n po - Continuous, moderately thick clay films on ped faces, common thin clay films in pores.
br - Colloid in bridges between mineral grains.
co - Colloid stains mineral grains.
3mk tpo - Many moderately thick clay films in tubular pores.
4ni po - Continuous thin clay films in interstitial pores.

Soil pH and Carbonates: (see pp. 235-238 of "The Manual")

pH - Give specific values. When writing descriptions use the following terms which may be followed by actual values:

extremely acid - below pH 4.5
very strongly acid - 4.5 - 5.0
strongly acid - 5.1 - 5.5
medium acid - 5.6 - 6.0
slightly acid - 6.1 - 6.5
neutral - 6.6 - 7.3
mildly alkaline - 7.4 - 7.8
moderately alkaline - 7.9 - 8.4
strongly alkaline - 8.5 - 9.0
very strongly alkaline - above pH 9.0

Carbonates - Indicate effervescence with dilute (about 1 normal) HCl. Relative Amount:

ve - very slightly effervescent - few bubbles are observed.
e - slightly effervescent - bubbles are readily observed.
es - strongly effervescent - bubbles form a low foam.
ev - violently effervescent - thick foam "jumps" up.

Modifiers of soft masses and concretions:

Sizes: (same as for mottles)

1 - fine, less than 5 mm. in diameter.
2 - medium, 5 to 15 mm. in diameter.
3 - large, more than 15 mm. in diameter.

Shapes:

r - generally rounded or slightly oblong.
i - irregularly shaped.

Distribution:

d - disseminated - entire mass contains lime.
s - segregated - lime is concentrated in areas.
  sf - lime occurs in filaments or threads.
  ss - lime occurs in seams.
  sm - lime occurs in soft masses
  sc - lime occurs in concretions (which can be removed from the mass and still retain a distinct shape - soft masses crumble).

Examples: e2rsm - slightly calcareous, lime segregated in rounded medium sized soft masses.
es, d - strongly effervescent with disseminated lime.

Horizon boundaries - describe the lower boundary of each horizon indicating distinctness and general topography (pp. 187 & 188 of "The Manual"):

Distinctness:
va - very abrupt, transition is sharp (less than 1 mm.).
a - abrupt, transition is less than 1 inch.
c - clear, transition is 1 to 2½ inches thick.
g - gradual, transition is 2½ to 5 inches thick.
d - diffuse, transition is more than 5 inches thick.

Topography:*
s - smooth, boundary is parallel to surface of the soil.
w - wavy, if pockets are wider than their depth.
i - irregular, if irregular pockets are deeper than their width.
b - broken, if parts of the horizon are unconnected with other parts.

* In addition modifiers sl (slightly) and v (very) may be used.

Footnotes should include remarks on such features as slickensides, concretions, krotovinas, estimated stone and cobble content of each horizon, estimated volume of roots where significant, or amplification of features not adequately covered by the abbreviated notations.

RESOURCE AREAS

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

GENERAL DESCRIPTION OF AGRICULTURAL RESOURCE AREA [redacted] C-18
SIERRA NEVADA FOOTHILLS, CALIFORNIA

Location and Physiography

This foothill area encircles the southern end of the San Joaquin Valley, extending north to the Shasta County line and borders the Central Valley along the western foot-slopes of the Sierra Nevada and Cascade Ranges. It is characterized by rolling to hilly relief and is dissected by numerous streams flowing into the valley. The upper slopes are fairly steep but gradually flatten out as they slope westward and merge into the terraces along the east edge of the Central Valley. The elevations range from about 500 feet to about 2500 feet in the north, and up to 5000 feet in the south. The landscapes along State Highway 49 from Mariposa to Placerville are typical of this area.

Climate

The climate changes with variations in elevation. Precipitation decreases from north to south and with decreasing elevations. It ranges from 35 inches in the northern part of the resource area to 14 inches in the southern part. The following table illustrates climatic variations in the area:

	Fresno County Friant Gov't. Camp	Fresno County Auberry	Placer County Auburn
Elevation, feet	410	1985	1295
Mean annual precip., inches	14.54	25.94	35.78
Mean annual temperature, °F	62.0	59.4	58.3
Mean date last 32°F temp. spring	Mar. 27	Apr. 13	Mar. 6
Mean date first 32°F temp..fall	Nov. 11	Nov. 4	Dec. 1
Length growing season 32°F, days	242	205	271
Annual PET, inches	35.94	32.31	32.65
Ea (4" AWC) inches	10.51	11.95	13.95

Soils

The soils of the Sierra Nevada Foothills are broadly characterized by:

1. Shallow (Auburn, Exchequer, Daulton, Whiterock, Toomes, and Henneke series) well drained, slightly acid, stony, cobbly or rocky, medium textured upland soils developed on slates, schists, volcanic debris, and serpentine bedrock.

2. Moderately deep to deep (Sierra, Auberry, and Ahwahnee series) moderately coarse textured, well drained, slightly acid granitic upland soils.

Conservation Problems

The shallow soils have problems because of their limited depth, low moisture-holding capacity, the presence of stones, rocks, or cobbles, and sloping relief. They are fairly stable and erosion is only slight where adequate plant residues are left to protect the soil.

The moderately deep to deep, moderately coarse textured soils are low in fertility. They occupy sloping to hilly relief and are very susceptible to erosion.

Land Use

The size of farm varies according to the enterprise. The average size fruit farm is from 40 to 80 acres, and the average size livestock ranch is from 1200 to 1800 acres.

About 4 percent of the area is cropland, 75 percent range, and the balance is brushland.

The principal crops grown are deciduous fruits and grain. The range cover is made up primarily of soft chess, wild oats, filaree, bur clover, ripgut and foxtail fescues. A large segment of this range has an overstory cover of from very scattered to dense stands of blue oak and digger pine. Live oak is an important component in many areas.

The brush land species are predominantly chamise, manzanita, wedgeleaf ceanothus, and yerba santa. Here again, scrubby live oak is an important species, particularly where fire has repeatedly gone through the area.

Where there has been a need for reseeding, Hardinggrass, LANA vetch, and improved annual grasses and legumes have proved successful. Some of the undesirable weeds that are in abundance, due in large part to past grazing management, are: tarweed, vinegar weed, turkey mullein, Medusa head, and goat grass.

A great many stock ponds have been constructed in the past several years to help distribute livestock grazing, and some additional ponds could well be built. Small irrigation water reservoirs, at feasible sites, for the development of irrigated pasture, could greatly alleviate grazing pressures on the range areas.

Land Use

This area is dominantly Federal lands belonging to the U. S. Forest Service and Bureau of Land Management. This land is bordered by or interspersed with private holdings. Enterprises are largely lumbering and recreation, with some livestock grazing, largely under permit from the Forest Service and Bureau of Land Management. There are a few deciduous orchards and some grain, hay, and pasture.

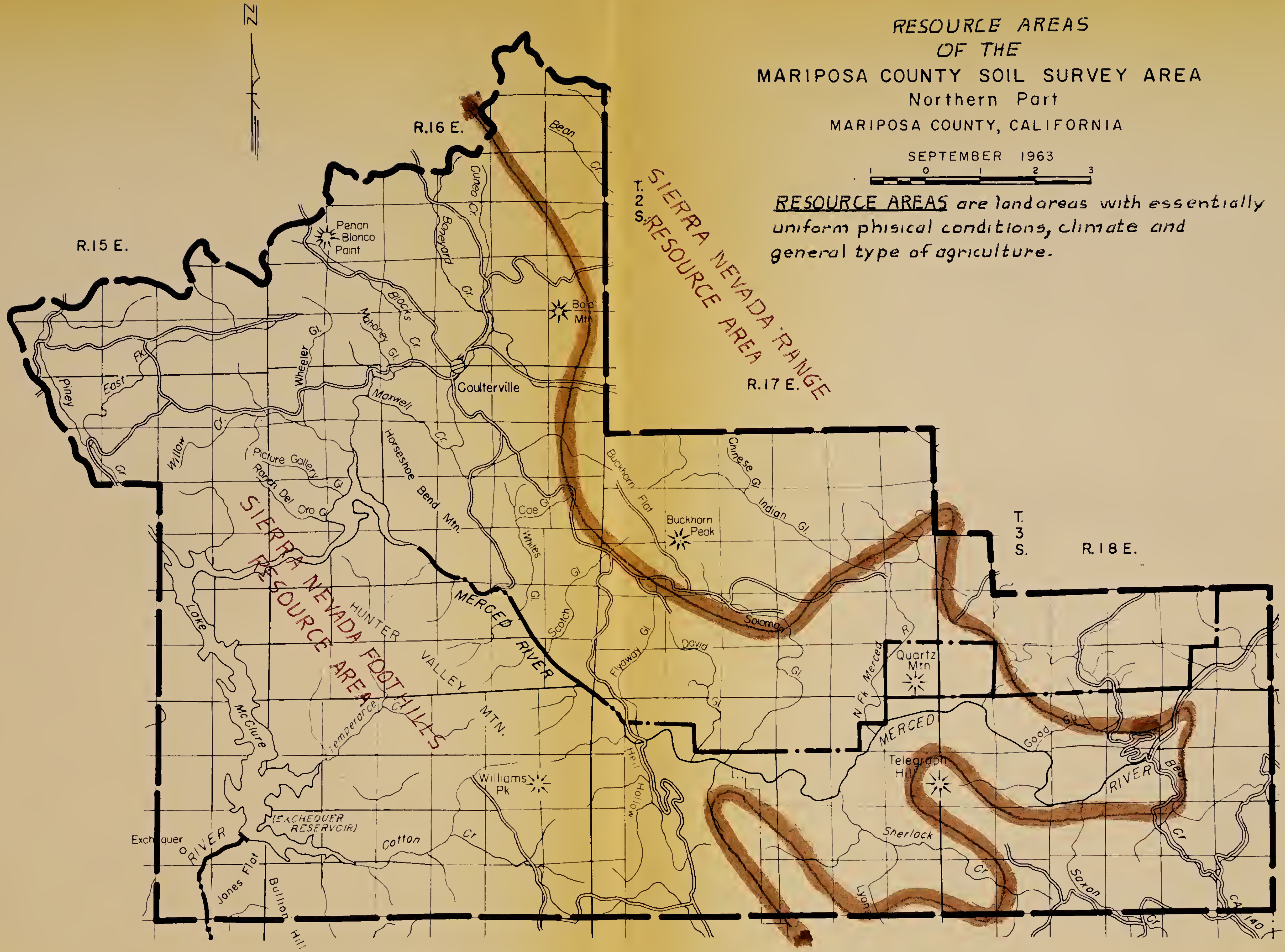
Less than one percent is utilized for cultivated crops, about 10 percent for range, and the balance is forest and miscellaneous lands.

The principal crops grown are deciduous fruits, pasture, and grain and hay. Grazing is largely confined to mountain meadows and to areas with open stands of timber. The meadows include blue grass, hairgrass, sedges, wire grass, clovers, and wild iris. Under open stands of timber, the forage cover is blue wild rye, fescues, blue grasses, mountain brome, and some browse species.

The forested areas are made up of ponderosa pine, Douglas fir, incense cedar, sugar pine, white fir, red fir, lodgepole pine, black oak, Oregon white oak, canyon live oak and tanoak. Above 8000 feet, the ridges and peaks are barren and trees are confined to the protected draws where a soil mantle is present.

RESOURCE AREAS OF THE MARIPOSA COUNTY SOIL SURVEY AREA
Northern Part
MARIPOSA COUNTY, CALIFORNIA

SEPTEMBER 1963


N
1
0
1
2
3
R.15 E.
R.16 E.
R.17 E.
R.18 E.
T. 2 S.
T. 3 S.
T. 4 S.
SIERRA NEVADA RANGE RESOURCE AREA
SIERRA NEVADA FOOTHILLS RESOURCE AREA
Penon Blanco Point
Bald Mtn
Coulterville
Buckhorn Peak
Quartz Mtn
Telegraph Hill
Williams Pk
Exchequer
(EXCHEQUER RESERVOIR)
HUNTER VALLEY MTN.
Horseshoe Bend Mtn.
MERCED RIVER
RIVER
N. Fk. Merced R.
Bean Cr.
Cuneo Cr.
Boneyard Cr.
Blacks Cr.
Mahoney Gl.
Wheeler Gl.
Maxwell Cr.
Piney
East Fk
Willow Cr.
Cr.
Picture Gallery Gl.
Rancho Del Oro Gl.
Coe Gl.
Whites Gl.
Scotch Gl.
Buckhorn Flat
Chinese Gl.
Indian Gl.
Solomon
David Gl.
Flyaway Gl.
Gl.
Good Gl.
Bear Cr.
Sherlock Cr.
Lyons
Saxon Cr.
CA 140
Hell Hollow
Lake McClure
Temperance Gl.
Cotton Cr.
Jones Flat
Bullion Hill

RESOURCE AREAS are land areas with essentially uniform phisical conditions, climate and general type of agriculture.

U S DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

7-N-17600

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

GENERAL DESCRIPTION OF SIERRA NEVADA RANGE RESOURCE AREA [illegible] D-[illegible]

Location and Physiography

This area extends from the southern tip of the Sierras near Tehachapi northwestward, encompassing the higher elevations of the Sierra Nevada Range; the southern Cascade Range, including Mt. Lassen and Mt. Shasta. The northern extremeties are bounded by a line along the crest of the Trinity Mountains running northward just west of Mt. Shasta and swinging back in a southeasterly direction toward Burney, Eagle Lake and Westwood, turning east to intersect the Nevada State line east of Verdi Peak. It is bounded on the east by Resource Area F-2, F-3, and F-4; on a line along the east side of the Sierra, generally at the 5,000 foot level. It is characterized by hilly to steep mountainous relief, with occasional mountain valleys. It includes most of the watershed lands for the major streams in California and western Nevada.

Elevations vary from 1,500 to 8,000 feet with many peaks above 11,000 feet and with valleys at 3,000 to 7,000 feet. The landscapes along U. S. Highway 40 from Colfax to Truckee are representative of this resource area.

Climate

The climate varies considerably throughout with about 35 inches precipitation in some of the valleys, while in the mountains it runs as high as 100 inches. In the high mountain areas a large part of the precipitation comes as snow. The following table illustrates climatic variations in the area:

	Alpine County Twin Lakes	Placer County Colfax	Tehama County Mineral
Elevation, feet	7,829	2,418	4,850
Mean annual precipitation, inches	46.96	47.33	51.15
Mean annual temperature, °F	38.8	58.3	45.6
Mean date last 32°F temp. in spring	July 2	April 4	June 20
Mean date first 32°F temp. in fall	Aug 11	Nov 15	Sept 10
Length of growing season, 32°F, days	28	225	78
Annual PET, inches	16.63	31.14	21.42
Ea (4"AWC), inches	10.52	15.00	13.11
Ea (4" AWC), 32°F, inches	2.62	11.28	3.97

Soils

The soils of the Sierra Nevada are broadly characterized by:

1. Upland soils (Aiken, Cohasset, Josephine, Sites, Lassen and Iron Mountain series) of the intermediate elevations that are shallow to deep, medium to moderately fine textured, medium to strongly acid soils developed on basic igneous and metasedimentary rocks on hilly to mountainous relief.

2. Upland soils (Shaver, Holland and Musick series) of the intermediate elevations that are moderately deep to deep, moderately coarse textured, medium to strongly acid soils developed on granitic rocks on hilly to mountainous relief.

3. Upland soils (Lytton, Kidd, Donner and Corbett series) of the high elevations that are shallow to moderately deep, coarse and moderately coarse textured, medium to strongly acid soils developed on volcanic breccia and granitic rocks on ridges and mountainous side slopes. This area also includes broad expanses of rockland on ridge crests and peaks.

4. Alluvial soils (Lights, Gansner, Childs and Tahoe series) of the mountain valleys that are well to poorly drained, moderately coarse to moderately fine textured, slight to strongly acid soils.

Conservation Problems

The upland soils of the intermediate elevations are medium to strongly acid and low in fertility. They are hilly to mountainous and erosion is a problem where the soils are disturbed by logging, fires, overgrazing and cultivation. Erosion hazards are highest on the moderately coarse textured granitic soils. The shallower soils have problems involving soil depth and low available water-holding capacity.

The upland soils of the high elevations have severe climatic limitations. They are medium to strongly acid and low in fertility. Erosion is a problem on hilly to mountainous slopes where soils are disturbed by fires and logging operations. Most of the soils are stony and available water-holding capacity is low.

The soils of the mountain valleys have problems of water management to prevent gullying and to maintain a satisfactory moisture condition for growth of desirable plant species. Drainage is a problem in many of these soils.

LAND CAPABILITY
CLASSIFICATION

Soil profile
full of water
- gravitational

LAND-CAPABILITY CLASSIFICATION

The land-capability classification is an interpretative grouping. It helps to introduce agricultural users to the detailed soil map. Soils are grouped according to their adaptability for common farm crops under permanent agriculture, to what they can be expected to do, to their limitations for sustained production, and to the risk of soil damage if they are mismanaged.

In this classification the individual mapping units are first grouped into capability units. The soils in any one capability unit have similar risks and limitations for agricultural use, respond to the same broadly defined practices, are adapted to about the same farm crops, and return about the same yields of these crops under comparable systems of management. Thus they are a basic management unit for common farm crops.

Capability units are then grouped into capability subclasses, a grouping that suggests both the degree and the kind of problem that a farmer or rancher will encounter in longtime use of the soil.

Capability subclasses, in turn, are grouped into capability classes, a grouping that expresses only the degree of limitation and risk for agricultural use.

There are eight broad capability classes, shown on land-capability maps by Roman numerals. As you go from Class I to Class VIII, your choices in use become fewer and risks become greater.

Soils in Classes I through IV can be safely used for the common cultivated crops, which leave the soil bare part of the time. But as you go from Class I to Class IV your choices become fewer. Also, the conservation practices needed for these cultivated crops usually become more difficult to apply and to keep working efficiently. Actually, soils in Class IV are border-line for the common cultivated crops under present economic conditions.

Although they are not subject to erosion, soils in Class V are not suited to ordinary cultivation, usually because they are wet too much of the time, because they are too stony, or because the growing season is too short. But they can produce good pasture -- or trees where there is enough rain.

Soils in Classes VI and VII are most safely used for some kind of permanent cover like grass or trees. They may be so steep, stony, wet, or shallow that they cannot be cultivated economically and safely. With very special management, including elaborate soil and water conservation practices, a few of them can be cultivated to special crops.

Class VIII land is not suited to any vegetative crop that can be sold. Usually it is very severely eroded or is extremely sandy, wet, arid, rough, steep, or stony. But it is useful for wildlife food and cover, for recreation, and for protecting the watershed.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE, CALIFORNIA
MARIPOSA, CALIFORNIA
October 1965

Mariposa Soil Survey Area
(Northern Part - BLM and Adjacent Private Lands)

LAND CAPABILITY CLASSIFICATION

Sierra Nevada Foothills Resource Area (C-18)

Land Cap. Unit	Mapping Unit Name
IIe1	Loamy Alluvial, 2-9% slopes.
IIIe8	Argonaut loam, 2-16% slopes.
IIIe8	Auburn loam, moderately deep, 2-16% slopes.
IIIe8	Dorado loam, moderately deep, 2-16% slopes.
IIIe8	Trabuco-Fallbrook loam, 2-16% slopes.
IVe4	Argonaut loam, shallow, 2-16% slopes.
IVe4	Auburn loam, 2-15% slopes.
IVe4	Auburn loam, 16-31% slopes.
IVe4	Dorado loam, 2-16% slopes.
IVe8	Argonaut loam, 16-31% slopes.
IVe8	Auberry-Sierra rocky sandy loams, 2-16% slopes.
IVe8	Auburn loam, moderately deep, 16-31% slopes.
IVs7	Auburn rocky loam, moderately deep, 2-16% slopes.
VIe1	Auberry-Sierra rocky sandy loams, 16-31% slopes.

Land Cap. Unit	Mapping Unit Name
VIe4	Argonaut loam, shallow, 16-31% slopes.
VIe4	Argonaut rocky loam, shallow, 9-31% slopes.
VIe4	Auburn rocky loam, 16-31% slopes.
VIe4	Daulton loam, 16-31% slopes.
VIe4	Dorado rocky loam, 16-31% slopes.
VIe4	Laughlin rocky loam, 16-31% slopes.
VIe8	Argonaut rocky loam, 16-51% slopes.
VIe8	Auburn loam, moderately deep, 31-51% slopes.
VIe8	Auburn rocky loam, moderately deep, 16-51% slopes.
VIe8	Auburn stony loam, moderately deep, 9-31% slopes.
VIe8	Dorado rocky loam, moderately deep, 16-51% slopes.
VIe8	Trabuco-Fallbrook rocky loam, 16-51% slopes.
VIIe1	Auberry-Sierra rocky sandy loam, 31-75% slopes.
VIIe4	Argonaut rocky loam, shallow, 31-51% slopes.
VIIe4	Auburn rocky loam, 31-75% slopes.
VIIe4	Auburn stony loam, 31-51% slopes.
VIIe4	Daulton rocky loam, 31-75% slopes.
VIIe4	Dorado rocky loam, 31-75% slopes.
VIIe4	Laughlin rocky loam, 31-75% slopes.
VIIe4	Maymen rocky loam, 31-75% slopes.

Land Cap. Unit	Mapping Unit Name
VIIe8	Auburn rocky loam, moderately deep, 51-75% slopes.
VIIe8	Bancas rocky loam, severely eroded, 31-75% slopes.
VIIs0	Riverwash and mine tailings
VIIs4	Auburn soil material, 31-75% slopes.
VIIs4	Maymen soil material, 31-75% slopes.
VIIs4	Mine dumps
VIIs4	Whiterock rocky loam, 5-51% slopes.
VIIs7	Auburn extremely rocky loam, 5-75% slopes.
VIIs9	Henneke rocky loam, 2-75% slopes.
VIIs9	Hornitos coarse sandy loam, 2-31% slopes.
VIIIe1	Maymen soil material, over 75% slopes.
VIIIe1	Rockland

Sierra Nevada Range Resource Area (D-22)

Land Cap. Unit	Mapping Unit Name
IIe1	Josephine loam, deep, 2-9% slopes.
IIe1	Musick loam, 2-9% slopes.
IIw2	Ferndale loam, 1-5% slopes.

Land Cap. Unit	Mapping Unit Name
IIIe1	Josephine loam, 9-16% slopes.
IIIe1	Musick loam, 9-16% slopes.
IIIe8	Josephine loam, 2-16% slopes.
IVe1	Josephine loam, deep, 16-31% slopes.
IVe8	Josephine loam, 16-31% slopes.
VIe1	Aiken stony loam, deep, 16-51% slopes.
VIe1	Holland-Musick rocky sandy loam, 16-51% slopes.
VIe1	Sites loam, 31-51% slopes.
VIe4	Bandarita gravelly silt loam, 16-51% slopes.
VIe8	Aiken stony loam, 16-51% slopes.
VIe8	Josephine loam, 31-51% slopes.
VIe8	Josephine loam, 9-51% slopes
VIs8	Mariposa loam, 16-51% slopes.
VIIe8	Aiken stony loam, 51-75% slopes.
VIIe8	Aiken stony loam, severely eroded, 31-75% slopes.
VIIe8	Josephine rocky loam, 51-75% slopes

Land Cap. Unit	Mapping Unit Name
VIIs8	Mariposa loam, 51-75% slopes.
VIIIe1	Rockland

Resource Area C-18

Resource Area C-18
Mariposa, California
October, 1963

Capability Unit IIel - - Gently sloping land having deep to very deep, permeable soils.

The soils of this unit occur on gently sloping 2 to 5 percent alluvial fans. The soils are over 60 inches in depth. These soils have loam and sandy loam surface textures while the subsoils consists of sandy loam, loam and sandy clay loam textures. They are permeable and well drained soils. Soil profiles have more than 5 inches of available water-holding capacity. They have a moderate erosion hazard. Past erosion has been slight to moderate.

This unit is similar to IIIel except that the slopes are not as steep and the erosion hazard is not as great.

This land is being used for deciduous orchards, alfalfa, irrigated pasture, and native range.

The soils respond to nitrogen and phosphorus. These soils when cropped are generally irrigated with sprinklers and, to a lesser extent, by furrow. Some land smoothing can be done on these soils but extensive levelling will expose unfavorable soil material.

Representative Soil Phases:

Loamy Alluvial, 2-9% slopes.

Resource Area C-18
Mariposa. California
October, 1963

Capability Unit IIIe8 - - Gently sloping to rolling land having moderately deep soils.

This land consists of upland soils on slopes of from 2 to 16 percent. The soils are 20 to 36 inches deep over basic igneous rocks. Surface textures are loams; subsurface textures are loams to clay; subsurface permeability varies from moderate to slow; available water holding capacity ranges from 4 to 6 inches. These soils have a moderate to moderately severe erosion hazard. Past erosion has been slight to moderate.

This land is being used for native range and some irrigated crops such as deciduous orchards and irrigated pasture. This sloping land requires careful irrigation management because the soils are only moderately deep and a few have slow subsurface permeability. This land is primarily sprinkler irrigated and the management has been fairly good.

Cover crops should be used in the orchards. The soils in this unit will respond to application of nitrogen and phosphorus.

Representative Soil Phases:

Argonaut loam, 2-16% slopes
Auburn loam, moderately deep, 2-16% slopes.
Dorado loam, moderately deep, 2-16% slopes.
Trabuco-Fallbrook loam, 2-16% slopes.

Resource Area C-16
Mariposa, California
October, 1963

Capability Unit IVe4 - - Land having shallow soils with low available water-holding capacity, and occurring on undulating to hilly topography.

This unit consists of shallow, well drained upland soils on slopes ranging from 2 to 31 percent. They are about 18 to 24 inches in depth to bedrock. They consist of permeable loams and silt loams. Available water-holding capacity is about 4 inches for the soil profile.

These soils are relatively stable. However, erosion does occur on steeper slopes, particularly when ground cover is inadqquate. Most of these soils have only slight erosion.

This land is being used mostly for range. Occasionally it is cropped to grain in rotation with volunteer pasture. Where water is available some of this land is used for irrigated pasture. Yields are moderate. These soils respond well to applications of phosphorous and nitrogen fertilizers. The soils of this unit require careful water management, with frequent light applications of water. Sprinklers is the most common irrigation method.

Representative Soil Phases:

Argonaut loam, shallow, 2-16%
Auburn loam, 2-15% sloeps
Auburn loam, 16-31% slopes.
Dorsan loam, 2-16% slopes.

Resource Area 2-15
Mariposa, California
October, 1963

Capability Unit IVe6 - - Rolling to hilly land having moderately deep soils.

The soils of this unit are upland soils on slopes from 9 to 31 percent. The soils are 20 to 36 inches deep over acid and basic igneous rocks. Surface textures are sandy loams to loams; subsurface textures are loam to clay; subsurface permeability varies from moderate to slow; available moisture-holding capacity ranges from 3 to 6 inches. These soils have a severe erosion hazard. Past erosion has been slight to moderately severe.

This unit differs from IIIe4 by having steeper slopes.

Most of this land is used for range. Some areas at higher elevations have some timber. Where water is available, this land is being used for irrigated crops such as deciduous orchards and irrigated pasture. This land requires careful irrigation management because the soils are strongly sloping to moderately steep, are only moderately deep, and a few have slow subsurface permeability. This land is primarily sprinkler irrigated and the management has been fairly good.

The soils on the granitic materials tend to be more erosive than those formed from the basic igneous and slate materials. Granitic soils on 9 to 16 percent slopes and the soils on basic igneous rocks 16 to 31 percent slopes have been determined to have approximately an equivalent erosion hazard. Cover crops should be used in the orchards. The soils in this unit will respond to applications of nitrogen and phosphorus.

Representative Soil Phases:

Argonaut loam, 16-30% slopes.
Auberry-Sierra rocky sandy loams, 9-16% slopes.
[illegible] loam, moderately deep, 16-31% slopes.

Resource Area C-18
Mariposa, California
October, 1963

Capability Unit IVs7 - - Land having rocky soils on gentle to moderately steep slopes.

This unit consists of stony or cobbly upland soils occurring on slopes ranging from 3 to 31 percent. These soils have rocky loam textured surface soils and clay loam subsoils. They range in depth from 20 inches inches to 36 inches to weathered bedrock. The available water-holding capacity is about 4 inches for most profiles. They are moderately permeable in the surface and moderate to slowly permeable in the subsoil. Rock outcrops are present in such quantities that very little tillage can be accomplished. The erosion hazard varies from slight to moderately severe depending on slope.

Few acres of this land are presently being irrigated, however they are suitable for deciduous orchards and pasture. Soils of this unit will require sprinkler irrigation, and management that doesn't involve much tillage.

Representative Soil Phases:

Auburn extremely rocky loam, 5-75% slopes.

Resource Area C-18
Mariposa, California
October, 1963

Capability Unit VIel - - Hilly land having moderately deep, moderately coarse textured soils that have 2 to 5 inches available waterholding capacity.

The soils in this unit are over 30 inches deep to weathered granitic material. They have sandy loam surface textures and sandy loam to sandy clay loam subsurface textures. They are permeable and well drained and occur on slopes ranging from 16 to 31 percent. Some areas have occasional rock outcrops.

This land is used primarily for annual range. In some irrigated sections deciduous orchards are found on this unit. Permanent cover should be used in the orchards to protect the land from erosion. Higher yields will be obtained from orchards located on the deeper soils. The soils respond to nitrogen and phosphorus.

Representative Soil Phases:

Auberry-Sierra rocky sandy loams, 16-31% slopes.

Resource Area C-18
Mariposa, Calif., Oct 1963

Capability Unit VIe4 - - - - - - - Steep land having soils that are shallow to bedrock and having more than 2 inches of available water-holding capacity.

The soils in this unit are 10 to 20 inches in depth over fine grained bedrock. They are loam and silt loam soils, which may be rocky. The rocky areas do not appreciably reduce forage production or restrict movement of livestock. These are permeable, well drained upland soils on slopes ranging from 31 to 51 percent. The available water-holding capacity is over 2 inches. The erosion hazard is moderately severe and the past erosion is slight.

This unit is similar to IVe4, but differs by occurring on steeper slopes.

This land is being used for range. Good management of residues is required to maintain high production. These soils respond well to applications of nitrogen and phosphorus.

Representative Soil Phases:

Argonaut loam, shallow, 16-31% slopes.
Argonaut rocky loam, shallow, 9-31% slopes.
Auburn rocky loam, 16-31% slopes.
Daulton loam, 16-31% slopes.
Dorado rocky loam, 16-31% slopes.
Laughlin rocky loam, 16-31% slopes.

Resource Area C-18
Mariposa, Calif., Oct 1963

Capability Unit VIe8 - - - - - - - - Hilly to steep land having moderately deep, medium textured soils over bedrock.

The soils in this unit usually are stony or rocky. They consist of loams with finer textured subsoils. Bedrock occurs at depths of 24 to 36 inches. Subsoil permeability is generally moderately slow. The degree of rockiness or stoniness of these soils does not appreciably reduce forage production or restrict movement of livestock. Available water-holding capacity for the profiles is usually about 3 inches.

Erosion hazard is severe. Past erosion is slight to moderate. Very little erosion occurs on this soil when adequate residues are maintained.

These soils are used for range. Forage production usually is moderate. Land clearing is feasible on these soils. The non-stony soils and selected areas of the stony or rocky soils are suitable for seeding to perennial grasses. Other areas are suitable for seeding to annual forage plants. Most areas are suitable for fertilization.

Representative Soil Phases:

Argonaut rocky loam, 16-51% slopes.
Auburn loam, moderately deep, 31-51% slopes.
Auburn rocky loam, moderately deep, 16-51% slopes.
Auburn stony loam, moderately deep, 9-31% slopes.
Dorado rocky loam, moderately deep, 16-51% slopes.
Trabuco-Fallbrook rocky loam, 16-51% slopes.

Resource Area C-18
Mariposa, Calif., Oct 1963

Capability Unit VIIe1 - - - - - - Steep land consisting of moderately deep or deep moderately coarse textured soils.

These soils are sandy loams that are more than 24 inches to weathered granitic bedrock. Some soils are rocky. Subsoil textures range from sandy loam to sandy clay loam and available water-holding capacity is about 4 inches. The soils occur on uplands that have slopes of 31 to 75 percent. They are permeable and well drained. Erosion hazard is severe and past erosion generally has been moderate. This unit is similar to VIe1 except it has steeper slopes and a greater erosion hazard.

These soils are best suited to range. Usable forage production is low.

Representative Soil Phase:

Auberry-Sierra rocky sandy loam, 31-75% slopes.

Resource Area C-12
Mariposa, Calif., Oct 1963

Capability Unit VIIe4 - - - - - - Very steep land having shallow medium textured soils.

These soils consist of rocky or stony loam soils 10 to 20 inches deep to fine grained bedrock. They are moderately to slowly permeable, well drained and have available water holding capacities of 2 to 4 inches. These soils occur on uplands having slopes greater than 30 percent. Erosion hazard is high and past erosion generally has been moderate.

These soils are best suited to range and produce low amounts of usable forage.

Representative Soil Phases:

Argonaut rocky loam, shallow, 31-51% slopes.
Auburn rocky loam, 31-75% slopes.
Auburn stony loam, 31-51% slopes.
Daulton rocky loam, 31-75% slopes.
Dorado rocky loam, 31-75% slopes.
Laughlin rocky loam, 31-75% slopes.
Maymen rocky loam, 31-75% slopes.

Resource Area C-18
Mariposa, Calif., Oct 1963

Capability Unit VIIe6 - - - - - - - Very steep land having moderately deep medium textured soils.

These soils consist of rocky loam soils that are more than 24 inches to bedrock. They are permeable, well drained and having available water-holding capacity of about 5 inches. These soils occur on uplands having slopes that are steeper than 30 percent. Erosion hazard is severe and past erosion generally has been slight to moderate.

These soils are best suited to range and they produce low amounts of usable forage. Vegetation consists of oaks, shrubs and grasses with occasional digger pines.

Representative Soil Phases:

Auburn rocky loam, moderately deep, 51-75% slopes.
[illegible] rocky loam, severely eroded, 31-75% slopes.

Resource Area C-18
Mariposa, Calif., Oct 1963

Capability Unit VIIs0 - - - - - - Land along stream channels and in swale positions that have been mined or damaged by water.

The soils of this unit are extremely variable because they have been mined or worked by water. Depths range from shallow to deep. Textures vary from sandy loam to clay loam and may be mixed with cobbles or gravels. Most areas are underlain with coarse sands or gravel. Slopes range from 2 to 9 percent. Some areas are subject to frequent overflow.

This land is used for limited grazing of livestock and wildlife.

Representative Soil Phases:

Riverwash and mine tailings.

Resource Area C-18
Mariposa, California
October, 1963

Capability Unit VIIsh - - Land having very shallow, rocky soils occurring on gently rolling to steep topography

Soils in this unit generally consist of rocky loams that are less than 10 inches deep to massive bedrock. They occur on uplands having slopes of 5 to 51 percent. Total available water-holding capacity is about 1 inch for the soil profile. Erosion hazard is moderate. Past erosion generally has been slight or moderate.

These soils are best suited to range and they produce small amounts of forage. Vegetation consists mainly of shrubs, such as ceanothus, chamise, and yerba santa, with open areas of annual grasses and forbs. Some scattered oak and digger pine may occur. Annual vegetation is quick to suffer from drouth.

Representative Soil Phases:

Auburn soil material, 31-75% slopes.
Maymen soil material, 31-75% slopes.
Mine dumps
Whiterock rocky loam, 5-51% slopes.

Resource Area C-18
Mariposa, California
October, 1963

Capability Unit VIIs7 - - Extremely rocky or stony lands with over 2 inches of available water-holding capacity.

The soils in this unit are extremely rocky or extremely stony. They are medium textured in the surface and have finer textured subsoils. These soils will vary in depth from 10 to 20 inches. They are permeable and well drained. The available water-holding capacity for the soil profile exceeds 2 inches. Slope ranges from 2 to 31 percent. Erosion hazard is slight to moderate and past erosion has been moderate.

This land is being used for limited grazing, watershed, and wild life.

Representative Soil Phases:

Auburn extremely rocky loam, 5-75% slopes.

Resource Area C-18
Mariposa, California
October, 1963

Capability Unit VIIs9 - - Land having soils that are extremely low in fertility.

The soils in this unit are developed from serpentine or sandstone. They consist of permeable loams or sandy loams less than 20 inches deep. Available water-holding capacity for the profile is about 1 or 2 inches. Slopes range from 2 to 75 percent. The erosion hazard is slight to severe. The soils developed on sandstone have a higher erosion hazard than those derived from serpentine. Runoff is rapid.

This land is best suited to range. Forage production is low.

Representative Soil Phases:

Henneke rocky loam, 2-75% slopes.
Hornitos coarse sandy loam, 2-31% slopes.

Resource Area C-22

Resource Area B-22
Mariposa, California
October, 1963

Capability Unit IIe1 - - Deep to very deep, well drained medium texture upland soils on gentle slopes.

The soils in this unit are deeper than 36 inches and have slight to moderate profile development. They occur on slopes of 2 to 9 percent and are well drained. Surface soil textures are loams and subsoil textures are loams, clay loams or permeable clays. The soils have basalt, andesite, schist or slate bedrock, but the soils above the bedrock are penetrated readily by roots and moisture. Generally the bedrock is more or less weathered or fractured and it also holds some available moisture.

These upland soils on gentle slopes are inextensive and most areas are in timber. Where irrigation water is available, some areas have been cleared and are used for orchard, irrigated pasture and hay. More areas are suitable for clearing and cultivation but timber is the best land use under current economic conditions. Where these soils are cultivated, the crops respond to fertilization with nitrogen and phosphorus. Native stands of timber consist of ponderosa pine, Douglas fir, and incense cedar. Production of these trees can be improved by thinning, pruning and protecting them from insects.

Representative Soil Phases:

Josephine loam, deep, 2-9% slopes.
Musick loam, 2-9% slopes.

Resource Area D-22
Mariposa, California
October, 1963

Capability Unit IIw2 - - Deep to very deep, moderately well drained, medium or moderately coarse textured soils on nearly level to very gentle slopes.

Soils of this unit have a water table within 5 feet of the surface during the spring months. The wetness is usually caused by seepage from higher adjacent lands. Soil depths generally are more than 5 feet although some soils may have layers of loose gravels at depths of 3 to 5 feet. Textures are loams or sandy loams and some areas are gravelly. Total available moisture ranges from about 6 to 10 inches and additional moisture is available because of subirrigation. Soil reaction ranges from slightly to medium acid (pH 6 to 6.8) and most slopes are less than 2 percent.

These soils occur in meadows in narrow valleys along streams where they are used for grazing or hay. Erosion is not a problem unless gullies form during the spring runoff period. These soils also are suited for improved irrigated pasture.

Representative Soil Phases:

Ferndale loam, 1-5% slopes.

Resource Area D-22
Mariposa, California
October, 1963

Capability Unit IIIe1 - - Deep to very deep, medium textured, gently to strongly sloping soils.

These soils are 36 inches to over 60 inches deep and well drained. Surface textures are loam; permeability ranges from moderately rapid to moderately slow; available moisture holding capacity is 5 - 10 inches, within the effective soil depth; slopes range from 9 - 16 percent; soils are slightly to moderately eroded and occur in the uplands.

The orchards and field crops grown on these soils respond to applications of nitrogen and phosphate fertilizers. The native stands of timber include ponderosa pine, incense cedar, Douglas fir, white fir and black oak. Generally these soils have high site qualities for the production of commercial timber.

Representative Soil Phases:

Josephine loam, 9-16% slopes.
Musick loam, 9-16% slopes.

Resource Area D-22
Mariposa, California
October, 1963

Capability Unit IIIe8 - - Moderately deep, medium textured soils on sloping to moderately steep topography.

These soils are 20 - 36 inches deep overlying bedrock and are well drained; surface textures are loam and permeability is moderate. The available moisture-holding capacities vary from 4 - 6 inches within the effective depth of the soils. Slopes are 5 - 16 percent. These soils are fairly stable but erosion can be a problem when the ground is left bare.

This unit differs from IIIe1 by having shallower soils.

Suitable crops are irrigated orchards and field crops. Native mixed and pure stands of conifers such as Douglas fir, ponderosa pine, incense cedar, and white fir are quite common.

Representative Soil Phases:

Josephine loam, 2-16% slopes.

Resource Area D-22
Mariposa, California
October, 1963

Capability Unit IVe1 - - Hilly land with deep medium textured soils.

These upland soils are 36 to 60 inches in depth. They consist of loam and silt loam textured soils with fine textured subsoils. They are permeable and well drained. The total available moisture-holding capacity varies from 6 to 10 inches. Past erosion has been slight to moderate. Erosion is usually associated with past cultivation.

This unit differs from IIIe1 by having steeper slopes.

The native vegetation is typically coniferous forests; mainly ponderosa pine, incense cedar, Douglas fir, black oak, and some white fir. This unit has a high site quality for producing timber.

Where irrigation water is available some areas are cleared and used for deciduous orchards and irrigated pasture. The crops grown on these soils respond to applications of nitrogen and phosphate fertilizers.

Representative Soil Phases:

Aiken stony loam, deep, 16-51% slopes.
Holland-Musick rocky sandy loam, 16-51% slopes.
Site loam, 31-51% slopes.

Resource Area D-22
Mariposa, California
October 1963

Capability Unit IVe8 - - Moderately deep, medium textured, moderately steep upland soils on bedrock.

These soils are about 20 to 36 inches deep over shale bedrock and they occur on 16 to 31 percent slopes. Textures are loams and permeabilities of soils above bedrock are moderate to rapid. The bedrock is more or less fractured and is penetrated by some roots and moisture. Total available moisture capacity ranges from 4 to 6 inches and reaction is slightly to medium acid (pH 6.1 to 6.8). Slopes range from 16 to 31 percent and erosion is not a serious problem unless the native vegetation is removed.

The soils occur in upland areas where they are used mostly for timber production. Under present economic conditions, this is the best use for these soils although they are suitable for irrigated orchard, and forage crops. Because of slope, sprinklers are best for irrigating these soils and erosion can be controlled by growing a permanent cover crop in orchards. Crops usually will respond to fertilization with nitrogen and phosphorus.

Representative soil phases:

Josephine loam, 16-31%

Resource Area D-22
Mariposa, California
October, 1963

Capability Unit VIe1 - - Deep to very deep well drained medium textured upland soils on hilly to steep slopes.

The soils in this unit are deeper than 36 inches and have slight to moderate profile development. Surface textures consist of sandy loams, loams and silt loams. They occur on slopes from 16 to 51 percent and are well drained. The total available moisture-holding capacity varies from 6 to 10 inches for the soil profile. Past erosion is slight or occasionally moderate. Moderate erosion is usually associated with burnt over areas.

This unit differs from IVe1 by having steeper slopes.

Native vegetation is typically coniferous forests; mainly ponderosa pine, incense cedar, Dougler fir, sugar pine, black oak and some while fir. This unit has a high site quality for producing timber. Yields of timber and better quality lumber can be harvested from these soils by pruning, thinning and protecting the trees against insect damage.

Representative soil phases:

Aiken stony loam, deep, 16-51% slopes
Holland-Musick rocky sandy loam, 16-51% slopes
Sites loam, 31-51% slopes.

Resources Area D-22
Mariposa, California
October, 1963

Capability Unit VIe4 - - Shallow upland soils with low moisture holding capacities on steep slopes.

Soils in this unit are well drained and are 10 to 20 inches deep to bedrock. Surface textures are loams to silt loams and may be gravelly. Subsoils are sand clay loams to clay loams. Permeability of the soil is moderately to moderately slow. Available moisture holding capacity ranges from 1 to 2½ inches. Slopes range from 16 to 51 percent and erosion is a problem when native vegetation is destroyed or the land disturbed by improper logging.

The soils occur in mountainous uplands where they are used for timber production. Rates of growth are slow.

Representative soil phases:

Sandarita gravelly silt loam, 16-51% slopes

Resource Area D-22
Mariposa, California
October, 1963

Capability Unit VIe8 - - Moderately deep, medium textured upland soils on steep slopes.

Soils in this capability unit are about 20 to 36 inches deep over bedrock. They are well drained and have surface textures and clay loam subsoils. Some soils are stony or rocky permeability is moderate. Total available moisture capacity ranges from 3 to 6 inches and reaction is slightly acid to medium acid (pH 6.1 - 6.8). Underlying bedrock is metasedimentary or metabasic rock.

The soils are used for timber production and erosion is not a problem unless the vegetation is destroyed. Slopes range from 5 to 51 percent. Three species include ponderosa pine, Douglas fir, and incense cedar, with sugar pine and true firs at higher elevations. Rates of tree growth generally are medium.

Representative soil phases:

Aiken stony loam, 16-51% slopes
Josephine loam, 31-51% slopes
Josephine loam, 9-51% slopes

Resource Area D-22
Mariposa, California
October, 1963

Capability Unit VIs8 - - Shallow rocky upland soils on steep slopes.

Soils in this unit are well drained and are about 1 to 2 feet deep to bedrock. Textures are loams and they are rocky. Permeability above the bedrock is moderate and moisture-holding capacity is 2 to 3 inches. Slopes range from 16 to 51 percent and erosion is a problem when the native vegetation is destroyed or the land disturbed by improper logging.

The soils occur in mountainous uplands where they are used for timber production. Rates of growth are slow.

Representative soil phases:

Mariposa loam, 16-51% slopes

[illegible]
Berkeley, California
October, 1963

Capability Unit VIIe1 - - Moderately deep, moderately coarse to medium textured soils on hot, steep slopes.

These upland soils are 20 to 36 inches deep over bedrock and well drained. Surface textures are loams, which may be stony or rocky. Permeability is moderate to moderately slow. Available moisture-holding capacities are 3 to 5 inches within the effective depth of the soil. Slopes are very steep, over 50% and the soils have a moderate erosion problem. Some soils are very stony and have severe erosion problems.

This unit is similar to VIIe, but differs by having steeper soils.

Soils in this unit are suitable for woodland use and generally have medium site qualities for commercial woodland production. Typical conifers consist of Douglas fir, ponderosa pine, incense cedar and white fir.

Representative soil phases:

Aiken stony loam, 51-75% slopes
Aiken stony loam, severely eroded, 51-75% slopes
Josephine rocky loam, 51-75% slopes

Resource Area D-22
Mariposa, California
October, 1963

Capability Unit VIIs8 - - Very steep shallow medium textured soils.

This unit consists of soils 10 to 20 inches deep over bedrock. These soils are permeable and well to excessively well drained. They have medium acid medium textured surface soils and often have finer textured, more acid subsoils. They are usually gravelly and very rocky. Available water-holding capacity is about 3 inches for soil profiles.

Slopes are from 51 to 75 percent. Erosion is slight or moderate.

This unit is similar to VIIe8, but differs by including shallower soils.

These soils support stands of conifers, but are often brushy where the cover has been destroyed by fires. The site quality for ponderosa pine is low and the steepness of slopes makes any management difficult.

Representative soil phases:

Mariposa loam, 51-75% slopes

RANGE SITES

RANGE SITE DESCRIPTION

Land Resource Area (C-18) Sierra Nevada Foothills
Mariposa Soil Survey Area

(Northern Part - BLM and Adjacent Private Lands)

1. RANGE SITE: Deep Granitic Soils

2. CLIMATE:

   a. Precipitation ranges from ___ to ___ inches, the major portion coming between October and April. The amount varies considerably from year to year.

   b. The length of the growing season depends upon the date of the first fall rain and the distribution pattern during the remainder of the rainy season. Growth usually starts some time in November and ends in May, but will vary with elevation.

3. TOPOGRAPHY AND ELEVATION:

   a. Hilly to steep open grass and grass-oak rangeland on slopes up to 51% with some small areas in excess of 51%. Elevation ranges from ___ to ____ feet. The exposure of steep slopes has considerable effect on the time of the green feed peridd. The north facing slopes are slower to reach grazing readiness, but stay green 10 days to 2 weeks longer at any given elevation. The total production is not greatly different, but south facing slopes are generally more heavily grazed than north facing slopes.

4. SOILS:

   a. The soils in this range site are over 24 inches in depth to weathered granitic material. They have sandy loam surface textures, and sandy loam to sandy clay subsnrface textures. They are permeable and well drained. Rock outcrops are common. Inherent fertility is moderate, and available water-holding capacity is 2.5 to 5.0 inches.

   b. Soils in this site are:

*3rL43A-27	Auberry-Sierra rocky sandy loams, 2-16% slopes
3rL43A-27	Auberry-Sierra rocky sandy loams, 16-31% slopes.
3rL43A-27	Auberry-Sierra rocky sandy loams, 31-75% slopes.

Detailed soils descriptions are available in the Soil Survey Descriptive Legend.

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*These rock free phases are arable lands, but are included in this site when used as range. If any seeding or fertilization or other range improvement programs are anticipated these areas should receive first consideration.

STD = DUC

PRESE - ER

5. POTENTIAL PLANT COVER:

a. Will consist of a mixture of:

1. Approximately 70% desirable plants such as soft chess, filaree and small amounts of wild oats and bur clover. There will also be remnants of grasses, blue wild rye, beardless wild rye, and some dryland sedges.

2. Approximately 20% less desirable plants such as ripgut brome, annual fescues, mouse barley, and annual weeds,

3. Approximately 10% of undersirable plants such as fiddleneck, tarweed, Klamath weed, dogtail, nitgrass, and turkey mullein.

b. The vegetative cover (forage density) is usually high. (60 to 70%)

c. Estimated total herbage production is 2,200 pounds per acre in favorable years and 1,300 pounds in unfavorable years. Extremes in weather conditions can cause even greater fluctuation.

d. Litter and residue will be adequate to control erosion. Decaying litter from previous years will be evident. There will be no active washing or soil movement.

6. TYPE LOCATION:

Conservation Treatment

1. Estimated potential usable forage production under good management:

	Slopes up to 31%	Slopes 31-51%	Slopes over 51%
Favorable Yrs. 15	1200 #/Ac.	900 #/Ac.	300 #/Ac. 150
Less Favorable Years 26	600 #/Ac.	400 #/Ac.	0 #/Ac.

2. Proper range use: An average 2 inch stubble height should be left at the end of the grazing season on slopes up to 31%, leaving the range with a patchy appearance. On slopes over 31% an average 3 inch stubble should be left, leaving the range with a lightly grazed appearance. Slopes in excess of 51% will not be grazed too heavily if lesser slopes are properly utilized.

3. Brush control: Recommended where needed on slopes less than 31 percent.

4. Range seeding: Recommended after brush control where seed source of desirable forage plants is inadequate and on areas where cover has deteriorated. Only adapted annuals should be used.

5. Fertilization: Recommended on slopes of less than 31 percent. These soils respond well to applications of N,P, and Sulphur.

RANGE SITE DESCRIPTION

Land Resource Area (C-18) Sierra Nevada Foothills
Mariposa Soil Survey Area

(Northern Part - BLM and Adjacent Private Lands)

1. RANGE SITE: Extremely Rocky Land

2. CLIMATE:

   a. The average annual precipitation varies from ___ to ___ inches, the major portion coming between October and April. Year to year fluctuation is great.

   b. The length of the growing season and production depend upon the date of the first fall rain and the distribution pattern during the remainder of the rainy season. Growth usually starts sometime in November and ends in May, but will vary with elevation.

3. TOPOGRAPHY AND ELEVATION:

   a. Gently rolling to steep open grass, grass-oak or grass-oak-brush covered rangeland on slopes of 3 to 51% - quite often ridge tops, elevations range from ___ to ____ feet. The exposure of steep slopes has considerable effect on the time of the green feed period. The north facing slopes are slower to reach grazing readiness, but stay green 10 days to 2 weeks longer at any given elevation. The total production is not greatly different, but south facing slopes are generally more heavily grazed than north facing slopes.

4. SOILS:

   a. The soils in this range site are over 10 inches in depth to bedrock. They are extremely rocky loams and silt loams with 20 to 50% of the ground surface being occupied by rocks. The soil between the rocks is permeable and well drained. Inherent fertility is moderate and the available water-holding capacity for the profile is from 3 to 6 inches.

   b. Soils in this site are:

4erM4B-40	Auburn extremely rocky loam, 5-75% slopes.

   Detailed soils descriptions are available in the Soil Survey Descriptive Legend.

5. POTENTIAL PLANT COVER:

a. On the open ground among the rocks - will consist of a mixture of:

1. Approximately 70% desirable plants such as soft chess, wild oats, bur clover and filaree along with remnant perennial grasses growing in the open or around and under scattered digger pine, blue or interior live oak.

2. Approximately 20% less desirable plants such as ripgut brome, annual fescues, mouse barley and annual lupine.

3. Approximately 10% undesirable plants such as fiddleneck, tarweed, turkey mullein, nitgrass, silver hairgrass and dogtail.

b. The vegetative cover (forage density) is usually high (65-75%) on the open rock free ground.

c. Estimated total herbage production is 1200 pounds per acre in favorable years and 700 pounds per acre in less favorable years. The amount of rocks on the surface can greatly influence this, and extremes in weather condition can cause even greater fluctuation.

d. Litter and residue will be adequate on the rock free areas to control erosion. Decaying litter from previous years will be evident on the surface of the ground. There will be no active washing or soil movement.

6. TYPE LOCATION:

Conservation Treatment

1. Estimated potential usable forage production under good management:

Favorable years	700 pounds/acre.
Less favorable years	300 pounds/acre.

2. Proper range use: An average 2 inch stubble height should be left on the rock free areas at the end of the grazing season. This will leave the forage producing areas with a patchy appearance. On the steeper slopes heavier residues are required to control erosion.

3. Brush Control: Not recommended on this site.

4. Seeding: Not recommended on this site except in case of emergency for erosion control.

5. Fertilization: Not recommended on this site.

RANGE SITE DESCRIPTION

Land Resource Area (C-18) Sierra Nevada Foothills
Mariposa Soil Survey Area

(Northern Part - BLM and Adjacent Private Lands)

1. RANGE SITE: Rocky Loam Foothills

2. CLIMATE:

   a. The average annual precipitation varies from ___ to ___ inches, the major portion coming between October and April. Year to year fluctuation is great.

   b. The length of the growing season and production depend upon the date of the first fall rain and the distribution pattern during the remainder of the rainy season. Growth usually starts some time in November and ends in May, but will vary with elevation.

3. TOPOGRAPHY AND ELEVATION:

   a. Gently rolling to steep open grass and grass-oak covered rangeland on slopes up to 51%, with small intermingled acreages going as high as 75%. Elevations range from ___ to ____ feet. The exposure of steep slopes has considerable effect on the time of the green feed period. The north facing slopes are slower to reach grazing readiness, but stay green 10 days to 2 weeks longer at any given elevation. The total production is not greatly different, but south facing slopes are generally more heavily grazed than north facing slopes.

4. SOILS:

   a. The soils in this range site are 20 to 36/or more inches in depth to fine grained bedrock. The surface textures are loam and rocky loams. Most subsurface textures are clay loams. They are permeable and well drained. They are relatively stable. Rock outcrops are common. Inherent fertility is moderate and available water-holding capacity is from 3 to 6 inches.

   b. Soils in this site are:

*3M43B-46	Argonaut loam, 2-16% slopes.
*3M43B-46	Argonaut loam, 16-31% slopes.
3rM43B-46	Argonaut rocky loam, 16-51% slopes.
*2M43B-40	Auburn loam, moderately deep, 2-16% slopes.
*3M43B-40	Auburn loam, moderately deep, 16-31% slopes.
2M43B-40	Auburn loam, moderately deep, 31-51% slopes.
*3rM43B-40	Auburn rocky loam, moderately deep, 2-16% slopes.
3rM43B-40	Auburn rocky loam, moderately deep, 16-51% slopes.
3rM43B-40	Auburn rocky loam, moderately deep, 51-75% slopes.
3sM43B-40	Auburn stony loam, moderately deep, 9-31% slopes.
*3M4E-72	Dorado loam, moderately deep, 2-16% slopes.
3M4E-72	Dorado rocky loam, moderately deep, 16-51% slopes.
*2M43A-33	Trabuco - Fallbrook loams, 2-16% slopes.
3rM43A-33	Trabuco - Fallbrook rocky loams, 16-51% slopes

Detailed soils descriptions are available in the Soil Survey Descriptive Legend.

*These rock free phases are arable lands, but are included in this site when used as range. If any seeding or fertilization or other range improvement programs are anticipated these areas should receive first consideration.

5. POTENTIAL PLANT COVER:

a. Will consist of a mixture of:

1. Approximately 70% desirable plants such as soft chess, wild oats, bur clover and filaree along with remnant perennial grasses growing in the open or around and under scattered digger pine, blue or interior live oak.

2. Approximately 20% less desirable plants such as ripgut brome, annual fescues, mouse barley and annual lupine.

3. Approximately 10% undesirable plants such as fiddleneck, tarweed, turkey mullein, nitgrass, silver hairgrass and dogtail.

b. The vegetative cover (forage density) is usually high. (65-75%)

c. Estimated total herbage production is 2600 pounds per acre in favorable years and 1500 pounds in unfavorable years. Extremes in weather conditions can cause even greater fluctuation.

d. Litter and residue will be adequate to control erosion. Decaying litter from previous years will be evident on the surface of the ground. There will be no active washing or soil movement.

6. TYPE LOCATION:

ROCKY LOAM FOOTHILLS

Conservation Treatment

1. Estimated potential usable forage production under good management:

	Slopes up to 31%	Slopes 31-51%	Slopes over 51%
Favorable Yrs.	1600 #/Ac.	1300 #/Ac.	500 #/Ac.
Less Favorable Yrs.	800 #/Ac.	500 #/Ac.	0 #/Ac.

2. Proper range use: An average 2 inch stubble height should be left at the end of the grazing season on slopes up to 31%, leaving the range with a patchy appearance. On slopes over 31% an average 3 inch stubble should be left, leaving the range with a lightly grazed appearance. Slopes in excess of 51% will not be grazed too heavily if lesser slopes are properly utilized.

3. Brush control: Recommended where needed on slopes where equipment can be safely operated (generally less than 31%).

4. Range seeding: Recommended after brush control where seed source of desirable forage plants is inadequate and on areas where cover has deteriorated. Hardinggrass is adapted on these soils where an adequate seedbed can be prepared and where the average annual rainfall is greater than 16".

5. Fertilization: Recommended on slopes where equipment can be safely operated and where livestock can make full use of the added forage produced (generally less than 31%). These soils respond well to N and P.

RANGE SITE DESCRIPTION

Land Resource Area (C-18) Sierra Nevada Foothills
Mariposa Soil Survey Area

(Northern Part - BLM and Adjacent Private Lands)

1. RANGE SITE: Rough Serpentine Land

2. CLIMATE:

   a. The average annual precipitation varies from ___ to ___ inches, the major portion coming between October and April. Year to year fluctuation is great.

   b. The length of the growing season and production depend upon the date of the first fall rain and the distribution pattern during the remainder of the rainy season. Growth usually starts some time in November and ends in May, but will vary with elevation.

3. TOPOGRAPHY AND ELEVATION:

   a. Gently sloping to steep brush - grass-oak - digger pine covered range land on slopes from 5 to 51%. Elevations range from ___ to ___ feet.

4. SOILS:

   a. The soils in this range site are shallow and very shallow rocky loams that are extremely low in fertility. They are derived from serpentine bedrock. The permeabiltiy is moderate and the available water-holding capacity is very low. Organic matter content is moderate to low.

   b. Soils in this site are:

4rM3C-81	Henneke rocky loam, 2-75% slopes.

   Detailed soils descriptions are available in the Soil Survey Descriptive Legend.

5. POTENTIAL PLANT COVER:

   a. Will consist of a mixture of:

      1. Approximately 50 percent desirable plants such as soft chess and filaree along with remnants of purple needlegrass and squirrel tail growing around and under scattered brush plants. There will be very little or no bur clover present. The predominant brush will be chamise, yerba santa, Toyon and deer brush.

      2. Approximately 35 percent less desirable plants such as red brome, mouse barley, annual lupines and large amounts of annual fescue.

5. POTENTIAL PLANT COVER

3. Approximately 15 percent undesirable plants such as owl clover, gold field, brodiaea, pipcorn flower, and vinegar weed.

b. The vegetative cover (forage density) is usually low to moderate (35-45%).

c. Estimated total herbage production is 1600 pounds per acre during favorable years and 800 pounds per acre during less favorable years. Half of this being unpalatable brush species. Extremes in weather condition can cause even greater fluctuation.

d. Litter and residue will be adequate to control erosion. Decaying litter from previous years will be evident on the surface of the ground. There will be no active washing or soil movement.

6. TYPE LOCATION:

ROUGH SERPERTINE LAND

Conservation Treatment

1. **Estimated potential usable forage production under good management:**

Favorable years	200 pounds/acre
Less favorable years	Very little to none

2. **Proper range use:** An average 2-inch stubble height of the forage plants should be left on the ground at the end of the grazing season. This will leave areas between the brush plants with a patchy appearance.

3. **Brush Control:** Not recommended on this site.

4. **Range seeding:** Not recommended on this site except in case of emergency for erosion control.

5. **Fertilization:** Not recommended on this site.

RANGE SITE DESCRIPTION

Land Resource Area (C-18) Sierra Nevada Foothills
Mariposa Soil Survey Area
(Northern Part - BLM and Adjacent Private Lands)

1. RANGE SITE: Shallow Rocky Loam Foothills

2. CLIMATE:

   a. The average annual precipitation varies from ___ to ___ inches, the major portion coming between October and April. Year to year fluctuation is great.

   b. The length of the growing season and production depend upon the date of the first fall rain and the distribution pattern during the remainder of the rainy season. Growth usually starts some time in November and ends in May, but will vary with elevation.

3. TOPOGRAPHY AND ELEVATION:

   a. Gently rolling to steep, open grass and grass-oak covered rangeland on slopes of 9 to 51%. Slopes in excess of 51% are included but are minor in extent. Elevations range from ___ to ____feet. The exposure of the steep slopes has considerable effect on the time of the green feed period. The north-facing slopes are slower to reach grazing readiness, but stay green ten days to two weeks longer at any given elevation. The total production is not greatly different, but south-facing slopes are generally more heavily grazed than north-facing slopes.

4. SOILS:

   a. The soils in this range site are 10 to 20 inches in depth to fine grained bedrock. They are rocky or very rocky loams and silt loams. They are permeable and well drained. They are relatively stable. Rock outcrops are common. Inherent fertility is moderate and available water-holding capacity is 1.5 to 3.5 inches.

   b. Soils in this site are:

*4M43B-46	Argonaut loam, shallow, 2-16% slopes.
4M43B-46	Argonaut loam, shallow, 16-31% slopes.
4rM43B-46	Argonaut rocky loam, shallow, 9-31% slopes.
4rM43B-46	Argonaut rocky loam, shallow, 31-51% slopes.
*4M4B-40	Auburn loam, 2-15% slopes.
*4M4B-40	Auburn loam, 16-31% slopes.
4rM4B-40	Auburn rocky loam, 16-31% slopes.
4rM4B-40	Auburn rocky loam, 31-75% slopes.
4sM43B-40	Auburn stony loam, 31-51% slopes.
*4M4E-72	Dorado loam, 2-16% slopes.
4M4E-72	Dorado rocky loam, 16-31% slopes.
4rM4E-72	Dorado rocky loam, 31-75% slopes.
4rM4E-71	Daulton loam, 16-31% slopes.
4rM4E-71	Daulton rocky loam, 31-75% slopes.
4rM4E-76	Laughlin rocky loam, 16-31% slopes.
4rM4E-76	Laughlin rocky loam, 31-75% slopes.

Detailed descriptions are available in the Soil Survey Descriptive Legend.

*These rock free phases are arable lands, but are included in this site when used as range. If any seeding or fertilization or other range improvement programs are anticipated these areas should receive first consideration.

5. POTENTIAL PLANT COVER:

a. Will consist of a mixture of:

1. Approximately 70 percent desirable plants such as soft chess, wild oats, bur clover, and filaree along with remnant perennial grasses growing in the open or around and under scattered digger pine and blue or interior live oak.

2. Approximately 20 percent less desirable plants such as ripgut brome, annual fescues, mouse barley, and annual lupine.

3. Approximately 10 percent undesirable plants such as fiddleneck, tarweed, turkey mullein, nitgrass, silver hairgrass, and dogtail.

b. The vegetative cover (forage density) is usually high (65 to 75%).

c. Estimated total herbage production is 2,200 pounds per acre in favorable years, and 1,300 pounds per acre in unfavorable years. Extremes in weather conditions can cause even greater fluctuation.

d. Litter and residue will be adequate to control erosion. Decaying litter from previous years will be evident on the surface of the ground. There will be no active washing or soil movement.

6. TYPE LOCATION:

SHALLOW ROCKY LOAM FOOTHILLS

Conservation Treatment

1. Estimated potential usable forage production under good management:

	Slopes up to 31%	Slopes 31-51%	Slopes over 51%
Favorable Yrs.	1,200 #/Ac.	900 #/Ac.	300#/Ac.
Less favorable Yrs.	600 #/Ac.	300 #/Ac.	0#/Ac.

2. Proper range use: An average 2-inch stubble height should be left at the end of the grazing season on slopes up to 31 percent, leaving the range with a patchy appearance. On slopes over 31 percent, an average 3-inch stubble height should be left, leaving the range with a lightly grazed appearance. Slopes in excess of 51% will not be grazed too heavily if the lesser slopes are properly utilized.

3. Brush control: Recommended where needed on slopes where equipment can be safely operated (generally less than 31%).

4. Range seeding: Recommended after brush control where seed source of desirable plants is inadequate and on areas where cover has deteriorated. Only adapted annuals should be used.

5. Fertilization: Recommended on slopes where equipment can be safely operated and where livestock can make full use of the added forage produced (generally less than 31%). These soils respond well to N and P.

RANGE SITE DESCRIPTION

Land Resource Area (C-18) Sierra Nevada Foothills
Mariposa Soil Survey Area

(Northern Part - BLM and Adjacent Private Lands)

1. RANGE SITE: Very Shallow Land

2. CLIMATE:

   a. The average annual precipitation varies from ___ to ___ inches, the major portion coming between October and April. Year to year fluctuation is great.

   b. The length of the growing season and production of this site are extremely dependent on the distribution pattern of the rainfall. Growth usually starts some time in November but can end at any time, if there is a prolonged drought. This site is always the first to dry up in the spring.

3. TOPOGRAPHY AND ELEVATION:

   a. Gently rolling to steep open grass to dense brush covered rangeland on slopes of 9 to 51 percent. Elevations range from ___ to _____ feet. The exposure has considerable effect on the time of the green feed period. The north-facing slopes are slower to reach grazing readiness but stay green somewhat longer at any given elevation. Total production is not greatly different, but south-facing slopes are generally more heavily grazed than north-facing slopes.

4. SOILS:

   a. The soils in this range site are rocky or gravelly loams and silt loams less than 10 inches in depth to massive bedrock. The available water-holding capacity is about one inch. They are very quick to dry out.

   b. Soils in this site are:

5rXB-91	Auburn soil material, 31-75% slopes.
5rXE-92	Maymen soil material, 31-75% slopes.
4erM4E-72	Whiterock rocky loam, 5-51% slopes.

Detailed soils descriptions are available in the Soil Survey Descriptive Legend.

5. POTENTIAL PLANT COVER:

a. The cover on this site varies from open grassland to solid stands of brush. The forage producing areas will have a mixture of:

1. Approximately 70 percent desirable plants such as soft chess and filaree and, in favorable years, good stands of wild oats and bur clover.

2. Approximately 20 percent less desirable plants such as red brome, annual fescue, mouse barley, and annual lupine.

3. Approximately 10 percent undesirable plants such as owl clover, goldfield, brodiaea, popcorn flower, and vinegar weed.

b. The vegetative cover (forage density) is usually moderate (50 to 60%).

c. Estimated total herbage production for the forage producing areas is 1,400 pounds per acre during favorable years and 600 pounds per acre during less favorable years.

d. Litter and residue will be adequate to control erosion. Decaying litter from previous years will be evident on the surface of the ground. There will be no active washing or soil movement.

6. TYPE LOCATION:

VERY SHALLOW LAND

Conservation Treatment

1. Estimated potential usable forage production under good management:

Favorable years	400 pounds/acre
Less favorable years	Very little to none

2. Proper range use: An average 2-inch stubble height should be left on the ground on the forage producing areas at the end of the grazing season. This will leave that portion of the range with a patchy appearance.

3. Brush control: Not recommended on this site.

4. Range seeding: Not recommended on this site except in cases of emergency for erosion control.

5. Fertilization: Not recommended on this site.

FIELD SHEETS

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE, CALIFORNIA
Mariposa, California
September 10, 1963

Mariposa Soil Survey Area (Northern Part)
Identification Legend

Mapping Unit Symbols	Name (Tentative)
1gM4-16/BC-1	Loamy ALLuvial,2-9% slopes.
1g 3-101/BC-1-w1	"
1M4-1/A-1	Ferndale loam, 1-5% slopes.
1M4-1/A-1-W2 & B-1-W2	"
1M4-1/B-1	"
1M43A-21/BC-1	Musick loam, 2-9% slopes.
1M43A-21/D-1	Musick loam, 2-16% slopes.
1X-94/BC-1	Loamy Alluvial, 2-9% slopes.
2M4E-70/BC-1	Josephine loam, deep, 2-9% slopes.
2M4E-70/D-1	Josephine loam, deep, 2-16% slopes.
2M4E-70/E-1	Josephine loam, deep, 16-31% slopes.
2M4E-70/F-1	"
2M43A-33/D-1	Trabuco-Fallbrook loams, 2-16% slopes.
2M43B-40/BC-1	Auburn loam, moderately deep, 2-16% slopes.
2M43B-40/F-1	Auburn loam, moderately deep, 31-51% slopes.
2M43B-42/BC-1	Aiken stony loam, deep, 16-51% slopes.
2M43B-42/D-1	"
2M43B-42/E-1	"
2M43E-79/F-1	Sites loam, 31-51% slopes.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE, CALIFORNIA
MARIPOSA, CALIFORNIA
September 10, 1963

Mariposa Soil Survey Area (Northern Part)
Identification Legend

Mapping Unit Symbols	Name (Tentative)
2rL4A-20/2rl43A-21/EF-1	Holland - Musick rocky sandy loam, 16-51% slopes.
2sH32B-42/BC-1	Aiken stony loam, deep, 16-51% slopes.
2sH32B-42/DE-1	"
2sM43B-~~24~~42/EF-1	"
3erM43B-40/DG-2	Auburn extremely rocky loam, 5-75% slopes
3M4F-70/BD-1	Josephine loam, 2-16% slopes.
3M4E-70/E-1	Josephine loam, 16-31% slopes.
3M4E-70/F-1	Josephine loam, 31-51% slopes.
3M4E-72/BD-1	Dorado loam, moderately deep, 2-16% slopes.
3M4E-72/E-1	Dorado rocky loam, moderately deep, 16-51% slopes.
3M4E-72/F-1	Dorado rocky loam, moderately deep, 16-51% slopes.
3M4YE-77EF-1	Bandarita gravelly silt loam, 16-51% slopes.
3M43A-33/BD-1	Trabuco - Fallbrook loams, 2-16% slopes.
3M43B-40/BD-1	Auburn loam, moderately deep, 2-16% slopes.
3M43B-40/E-1	Auburn loam, moderately deep, 16-31% slopes.
3M43B-40/F-1	Auburn loam, moderately deep, 31-51% slopes.
3M43B-42/E-1	Aiken stony loam, 16-51% slopes.
3M43B-42/F-1	"
3M43B-46/BD-1	Argonaut loam, 2-16% slopes.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE, CALIFORNIA
MARIPOSA, CALIFORNIA
September 10, 1963

Mariposa Soil Survey Area (Northern Part)
Identification Legend

Mapping Unit Symbols	Name (Tentative)
3M43B-46/BD-1	Argonaut loam, 2-16% slopes.
3M43B-46/E-1	Argonaut loam, 16-31% slopes.
3rL43A-27/BD-1	Auberry-Sierra rocky sandy loams, 2-15% slopes.
3rL43A-27/E-1	Auberry-Sierra rocky sandy loams, 16-31% slopes.
3rL43A-27/FG-1	Auberry-Sierra rocky sandy loamd, 31-75% slopes.
3rM4E-70/DF-1	Josephine rocky loam, 9-51% slopes.
3rM4E-70/G-1	Josephine rocky loam, 51-75% slopes.
3rM4E-72/EF-1	Dorado rocky loam, moderately deep, 16-51% slopes.
3rM4E-76/EF-1	Laughlin rocky loam, 16-31% slopes.
3rM43A-33/BD-1	Trabuco - Fallbrook loams, 2-16% slopes.
3rM43A-33/EF-1	Trabuco - Fallbrook rocky loams, 16-51% slopes.
3rM43A-33/FG-3	Bancas rocky loam, severely eroded, 31-75% slopes.
3rM43B-40/BD-1	Auburn rocky loam, moderately deep, 2-16% slopes.
3rM43B-40/EF-1	Auburn rocky loam, moderately deep, 16-51% slopes.
3rM43B-40/G-1	Auburn rocky loam, moderately deep, 51-75% slopes.
3rM43B-46/EF-1	Argonaut rocky loam, 16-51% slopes.
3sM43B-40/DE-2	Auburn stony loam, moderately deep, 9-31% slopes.
3sM43B-42/EF-1	Aiken stony loam, 16-51% slopes.
3sM43B-42/FG-3	Aiken stony loam, severely eroded, 31-75% slopes.
3sM43B-42/G-1	Aiken stony loam, 51-75% slopes.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE, CALIFORNIA
MARIPOSA, CALIFORNIA
September 10, 1963

Mariposa Soil Survey Area (Northern Part)
Identification Legend

Mapping Unit Symbols	Name (Tentative)
4erM4B-40/CF-1	Auburn extremely rocky loam, 5-75% slopes.
4erM4E-72/CF-1	Whiterock rocky loam, 5-51% slopes.
4L4F-60/BE-1	Hornitos coarse sandy loam, 2-31% slopes.
4M4B-40/BD-1	Auburn loam, 2-15% slopes.
4M4B-40/E-2	Auburn loam, 16-31% slopes.
4M4E-71/~~BB~~ BD-1	Daulton loam, 16-31% slopes.
4M4E-71/E-1	"
4M4E-72/BD-1	Dorado loam, 2-16% slopes.
4M4E-72/E-1	Dorado rocky loam, 16-31% slopes.
4M4F-74/EF-1	Mariposa loam, 16-51% slopes.
4M4E-74/G-2	Mariposa loam,+ 51-75% slopes.
4M4YE-77/EF-1	Bandarita gravelly silt loam, 16-51% slopes.
4M43B-46/BD-1	Argonaut loam, shallow, 2-16% slopes.
4M43B-46/E-1	Argonaut loam, shallow, 16-31% slopes.
4rM3C-81/Bg-1	Hennecke rocky loam, 2-75% slopes.
4rM4B-40/E-1	Auburn rocky loam, 16-31% slopes.
4rM43B-40/FG-1	Auburn rocky loam, 31-75% slopes.
4rM4E-71/E-1	Daulton loam, 16-31% slopes.
4rM4E-71/FG-1	Daulton rocky loam, 31-75% slopes.
4rM4E-72/E-1	Dorado rocky loam, 16-31% slopes.

Mariposa Soil Survey Area (Northern Part)
Identification Legend

Mapping Unit Symbols	Name (Tentative)
4rM4E-72/FG-1	Dorado rocky loam, 31-75% slopes.
4rM4E-75/FG-1	Maymen rocky loam, 31-75% slopes.
4rM4E-76/E-1	Laughlin rocky loam, 16-31% slopes.
4rM4E-76/FG-1	Laughlin Rocky loam, 31-75% slopes.
4rM43B-46/DE-1	Argonaut rocky loam, shallow, 9-31% slopes.
4rM43B-46/F-1	Argonaut rocky loam, shallow, 31-51% slopes.
4sH3B-42/EF-3	Aiken stony loam, severely eroded, 31-75% slopes.
4sM43B-40/F-2	Auburn stony loam, 31-51% slopes.
5rME-72/CF-1	Whiterock rocky loam, 5-51% slopes.
5rXB-91/FG-1	Auburn soil material, 31-75% slopes.
5rXE-92/FG-1	Maymen soil material, 31-75% slopes.
5rXE-92/H-2	Maymen soil material, over 75% slopes.
MT	Mine dumps
MT & RX	Riverwash and mine tailings
RL	Rockland
RX	Riverwash and mine tailings

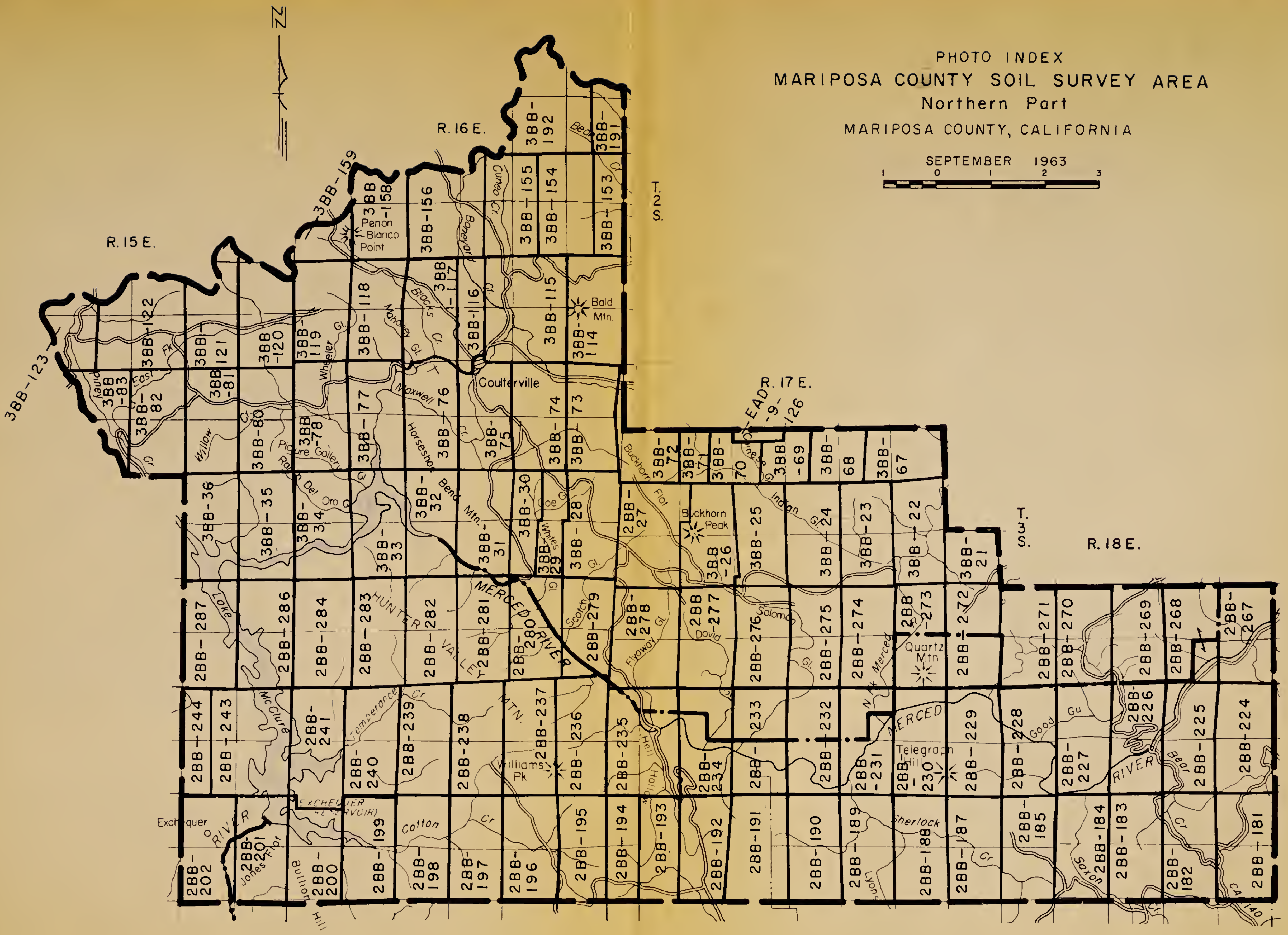
PHOTO INDEX

MARIPOSA COUNTY SOIL SURVEY AREA

Northern Part

MARIPOSA COUNTY, CALIFORNIA

SEPTEMBER 1963



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Coulterville
Buckhorn Peak
Quartz Mtn
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Williams Pk
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EXCHEQUER RESERVOIR
MERCED RIVER
N. Fk. Merced
HUNTER VALLEY
Bullion Hill
Jones Flat
Maxwell Cr.
Horseshoe Bend Mtn.
Blacks Cr.
Boneyard Cr.
Cuneo Cr.
Bear Cr.
Wheeler Gl.
Willow Cr.
Lake
McClure
Temperance Cr.
Cotton Cr.
Sherlock Cr.
Saxon Cr.
Lyons
Hell Hollow
Good Gu.
Indian Gl.
Solomon Gl.
David
Flyaway Gl.
Scotch Gl.
Whites Gl.
Coe Gl.
Buckhorn Flat
Del Oro
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Rattlesnake
Mahoney Gl.
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3BB-123
3BB-159
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